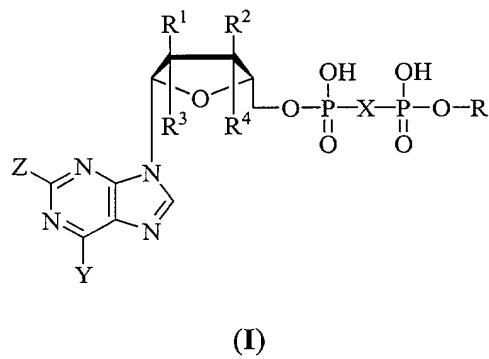


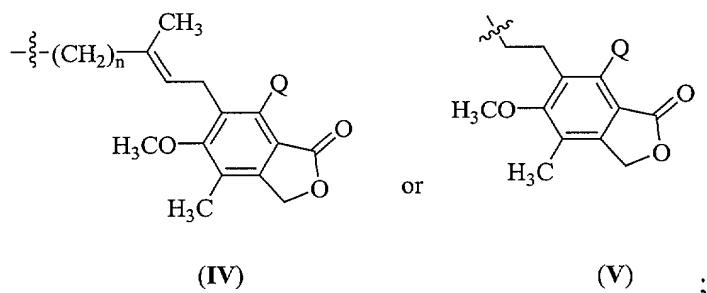
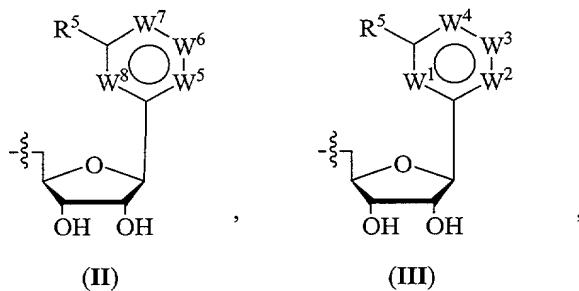
**WE CLAIM:**

1. A compound of the formula (I):



or its pharmaceutically acceptable salt thereof; wherein

R is



X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene;

Y is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, NHOH, NHOR<sup>6</sup>, NHNH<sub>2</sub>, NR<sup>6</sup>NH<sub>2</sub>, NHNHR<sup>6</sup>, SH, SR<sup>6</sup>, OH or OR<sup>6</sup>;

Z is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>8</sup>, NR<sup>8</sup>R<sup>9</sup>, NHOH, NHOR<sup>8</sup>, NHNH<sub>2</sub>, NR<sup>8</sup>NH<sub>2</sub>, NHNHR<sup>8</sup>, SH, SR<sup>8</sup>, OH, OR<sup>8</sup>;

W<sup>1</sup>-W<sup>4</sup> are same or different, and independently methyne (-CH=), azomethyne (-N=) or sulfur;

W<sup>5</sup>-W<sup>8</sup> are same or different, and independently methyne (-CH=) or azomethyne (-N=);

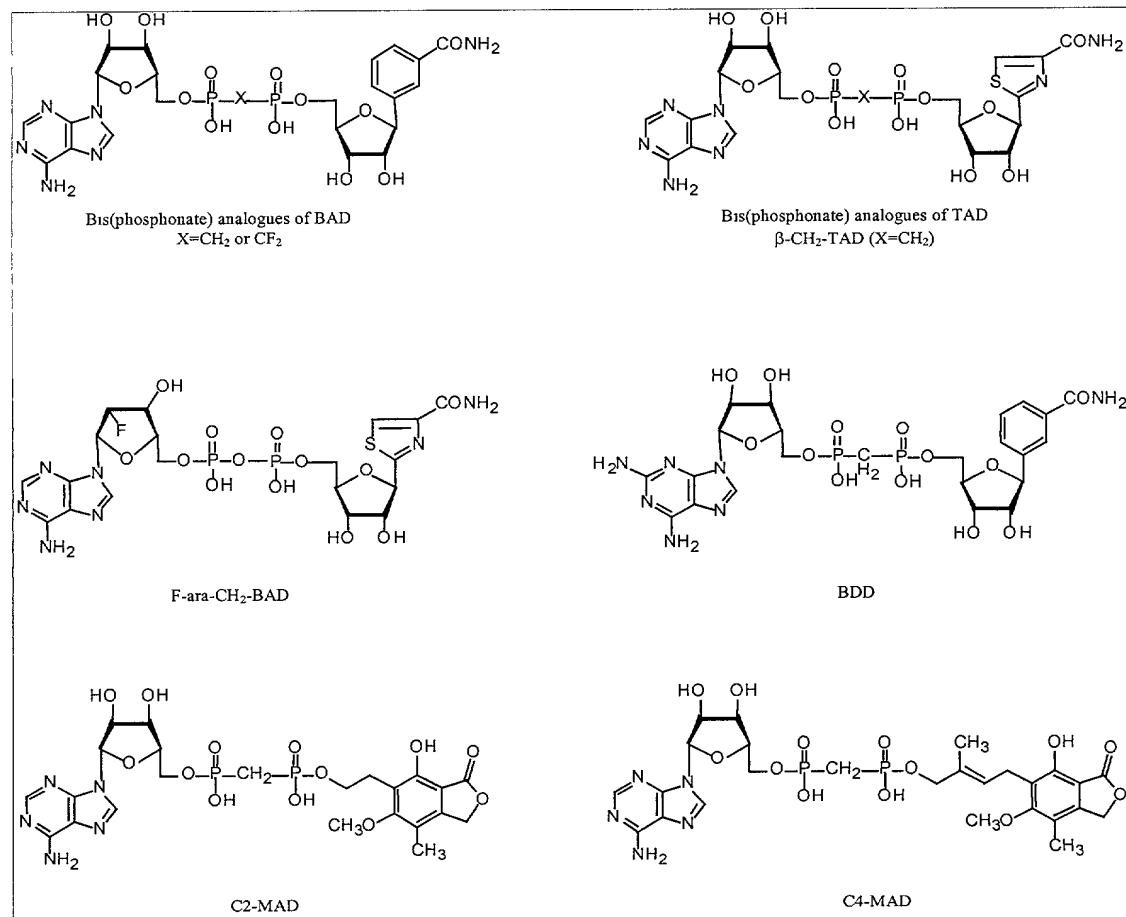
R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are independently hydrogen, hydroxyl or fluorine;

R<sup>5</sup> is halogen (F, Cl, Br, I), CN, CONH<sub>2</sub>, CO<sub>2</sub>Me, CO<sub>2</sub>Et or CO<sub>2</sub>H; and

R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> are independently a lower alkane or alkene of 1, 2, 3, 4, 5 or 6 carbons or aryl or aralkyl;

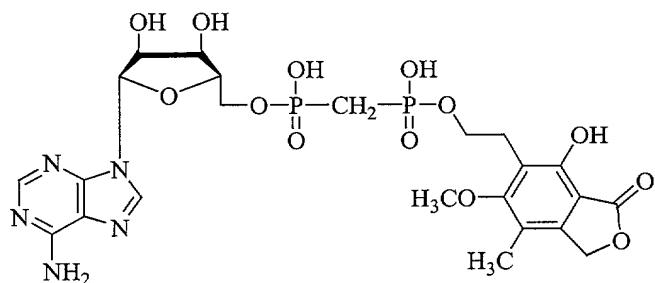
wherein the compound is specifically not tiazole-4-carboxamide adenine dinucleotide (TAD) or benzamide adenine dinucleotide (BAD).

2. The compound of Claim 1, wherein the compound of formula (I) is selected from the group consisting of the following:



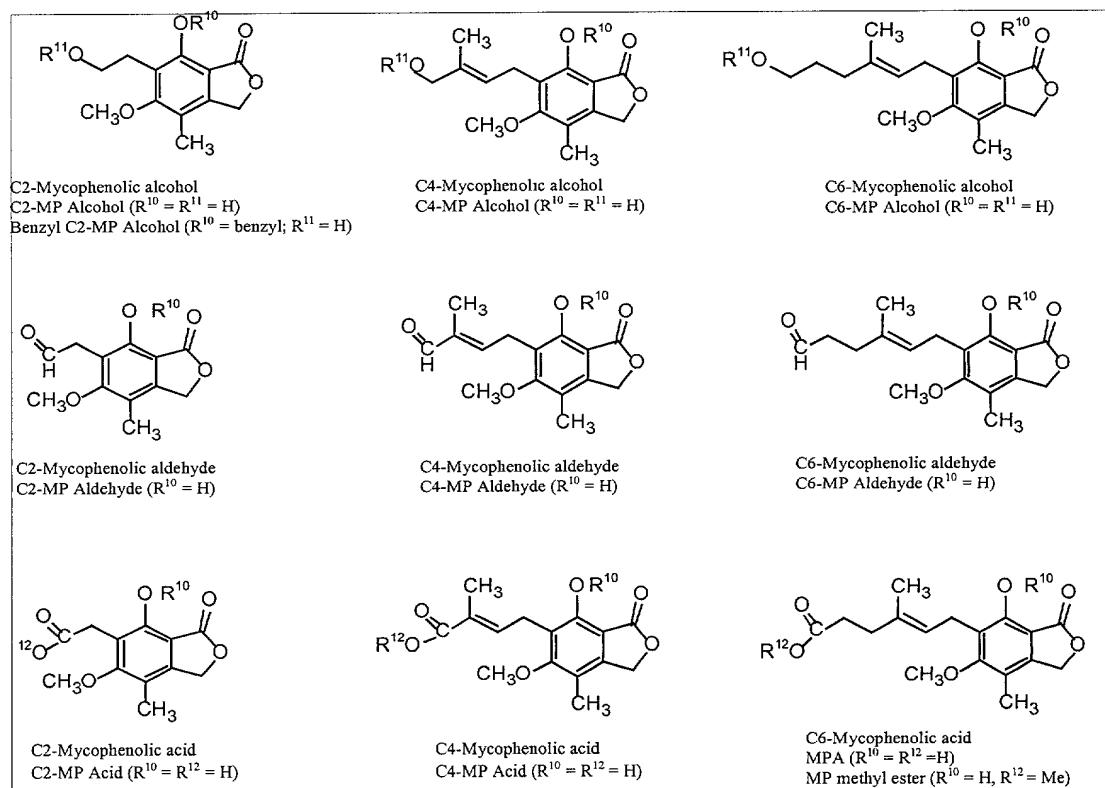
or its pharmaceutically acceptable salt thereof, wherein X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene.

3. A compound of the formula:



or its pharmaceutically acceptable salt thereof.

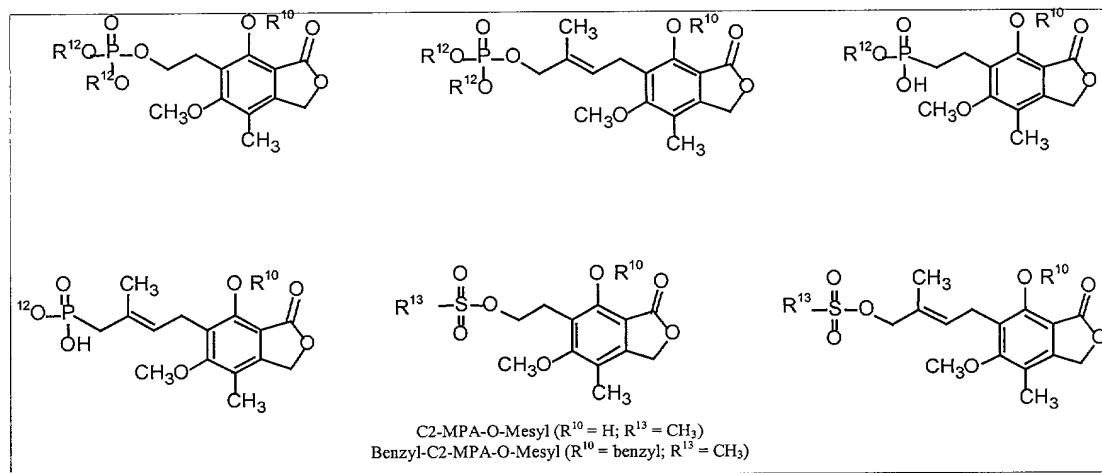
4. A compound selected from the group consisting of the following:



or its pharmaceutically acceptable salt thereof; wherein

each  $R^{10}$  and  $R^{11}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group, and each  $R^{12}$  is independently hydrogen, alkyl or aryl.

5. A compound selected from the group consisting of the following:



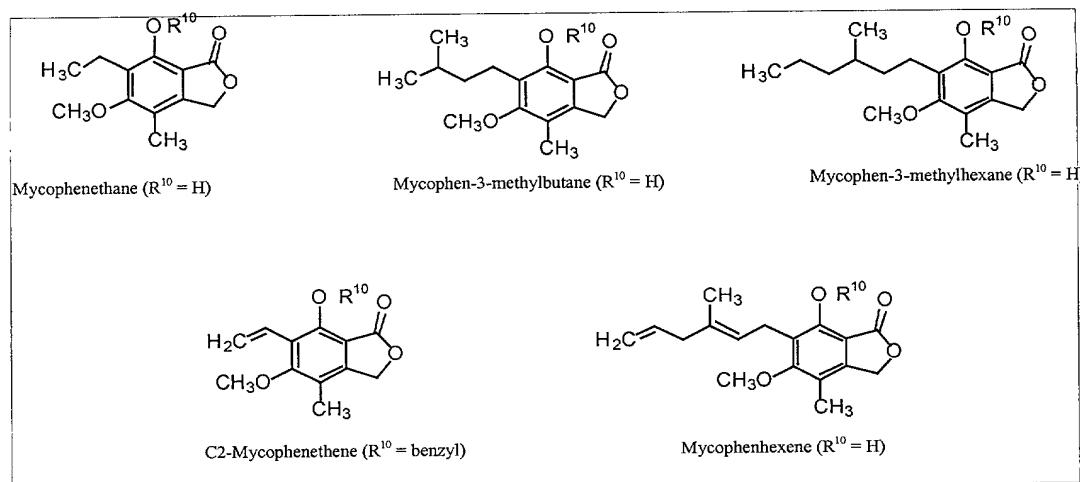
or its pharmaceutically acceptable salt thereof; wherein

each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

each R<sup>12</sup> is independently hydrogen, alkyl or aryl; and

$R^{13}$  is lower alkyl (i.e. a  $C_1$ ,  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkyl), lower alkenyl (i.e. a  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkenyl), lower alkynyl (i.e. a  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkynyl) or a  $C_3$ - $C_8$  cycloalkyl.

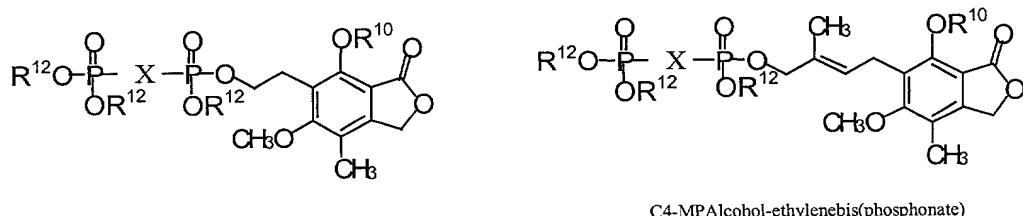
6. A compound selected from the group consisting of the following:



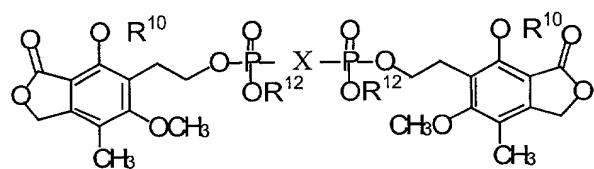
or its pharmaceutically acceptable salt thereof; wherein

each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group.

7. A compound selected from the group consisting of the following:



C4-MPA alcohol-ethylenebis(phosphonate)



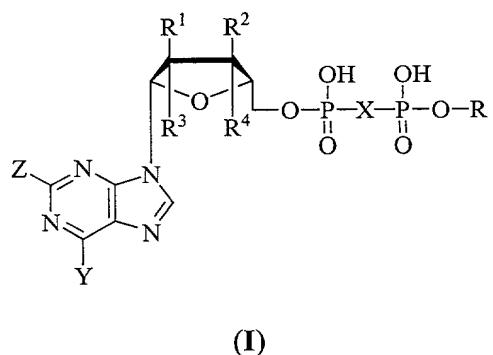
or its pharmaceutically acceptable salt thereof, wherein

X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene; and

each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group; and

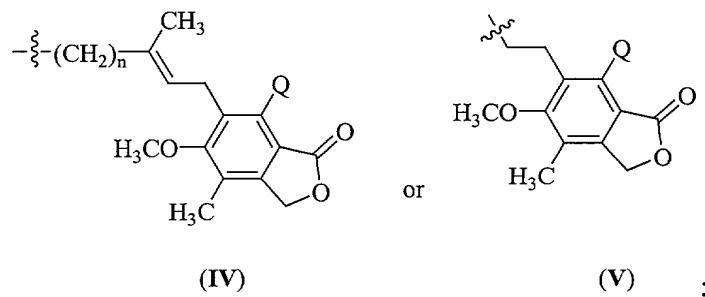
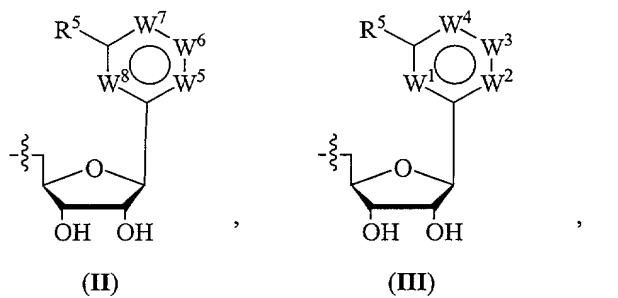
each R<sup>12</sup> is independently hydrogen, alkyl or aryl.

8. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound of the formula (I):



or its pharmaceutically acceptable salt thereof; wherein

R is



X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene;

Y is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, NHOH, NHOR<sup>6</sup>, NHNH<sub>2</sub>, NR<sup>6</sup>NH<sub>2</sub>, NHNHR<sup>6</sup>, SH, SR<sup>6</sup>, OH or OR<sup>6</sup>;

Z is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>8</sup>, NR<sup>8</sup>R<sup>9</sup>, NHOH, NHOR<sup>8</sup>, NHNH<sub>2</sub>, NR<sup>8</sup>NH<sub>2</sub>, NHNHR<sup>8</sup>, SH, SR<sup>8</sup>, OH, OR<sup>8</sup>;

$W^1$ - $W^4$  are same or different, and independently methyne ( $-\text{CH}=$ ), azomethyne ( $-\text{N}=$ ) or sulfur;

$W^5$ - $W^8$  are same or different, and independently methyne (-CH=) or azomethyne (-N=);

$R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently hydrogen, hydroxyl or fluorine;

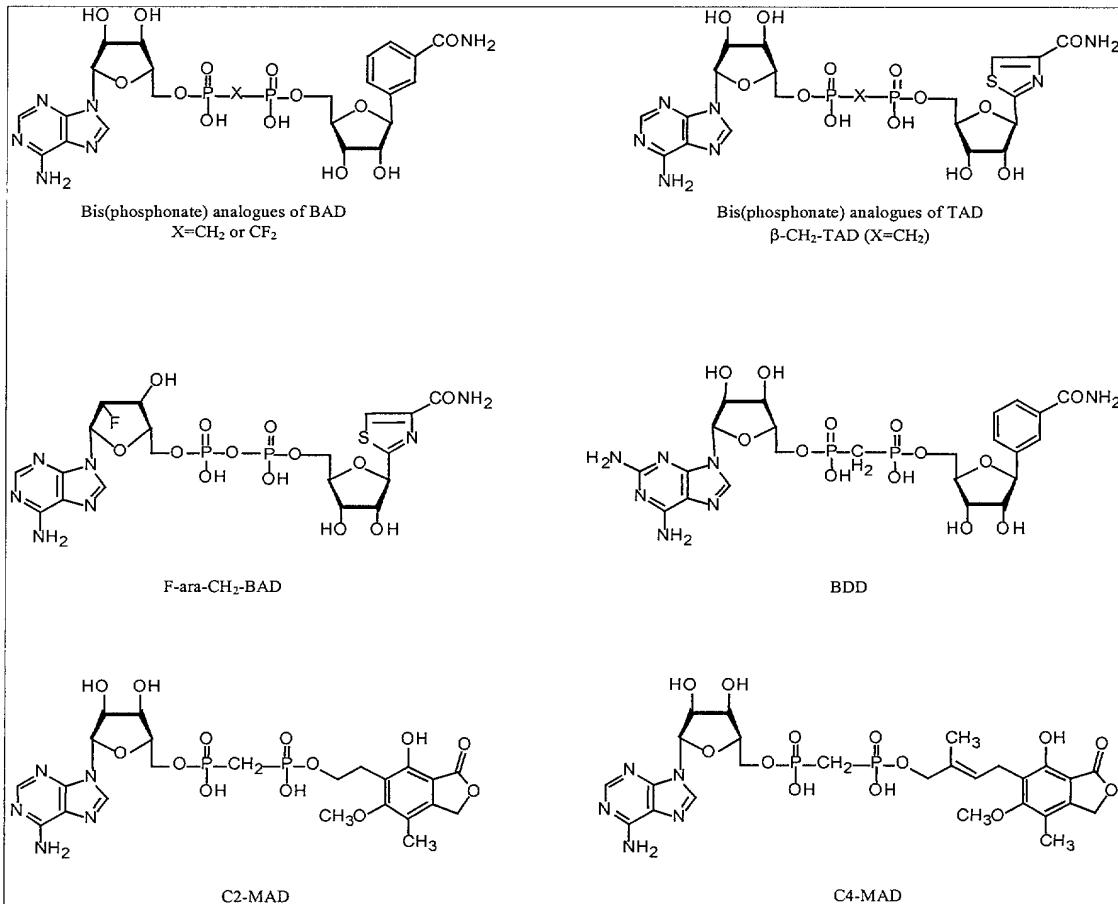
$R^5$  is halogen (F, Cl, Br, I), CN, CONH<sub>2</sub>, CO<sub>2</sub>Me, CO<sub>2</sub>Et or CO<sub>2</sub>H; and

$R^6$ ,  $R^7$ ,  $R^8$  and  $R^9$  are independently a lower alkane or alkene of 1, 2, 3, 4, 5 or 6 carbons or aryl or aralkyl;

wherein the compound is specifically not tiazole-4-carboxamide adenine dinucleotide (TAD) or benzamide adenine dinucleotide (BAD);

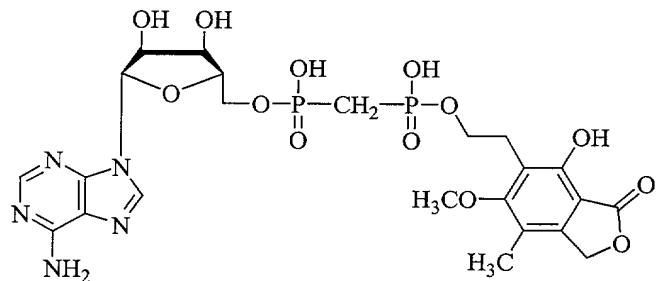
in a pharmaceutically acceptable carrier or diluent.

9. The pharmaceutical composition of Claim 8, wherein the compound of formula (I) is selected from the group consisting of the following:



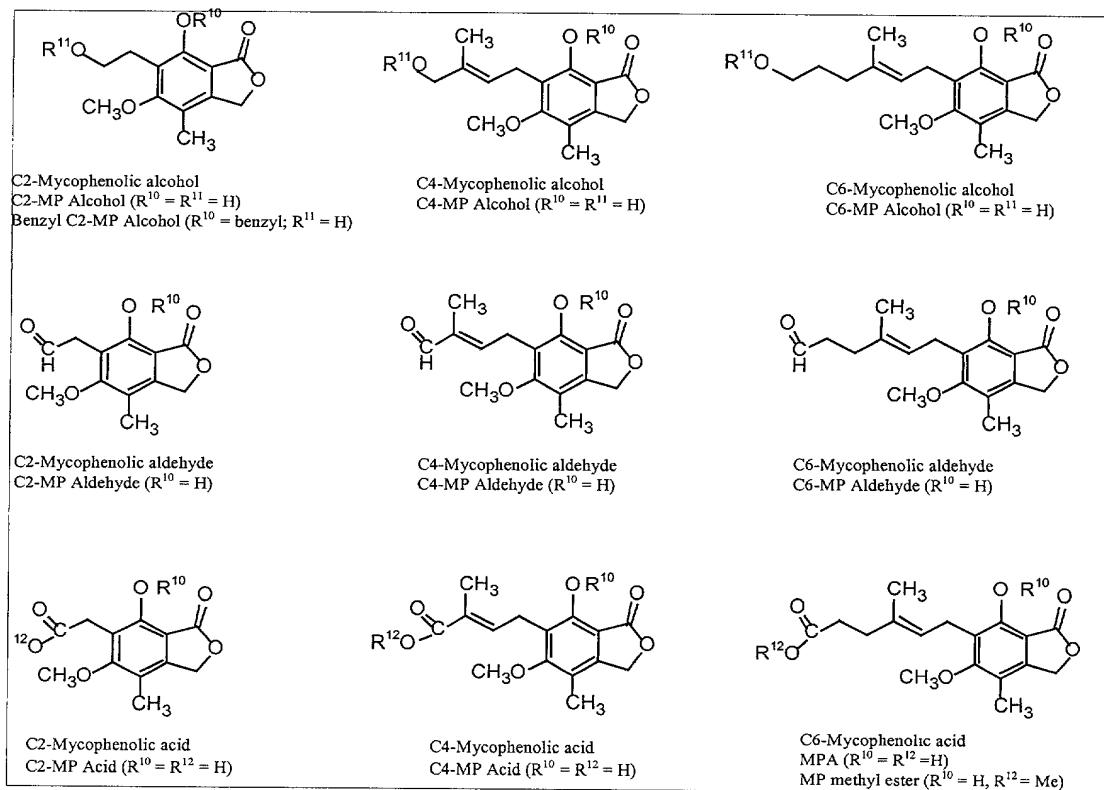
or its pharmaceutically acceptable salt thereof, wherein X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene.

10. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound of the formula:



or its pharmaceutically acceptable salt thereof, in a pharmaceutically acceptable carrier or diluent.

11. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound selected from the group consisting of the following:

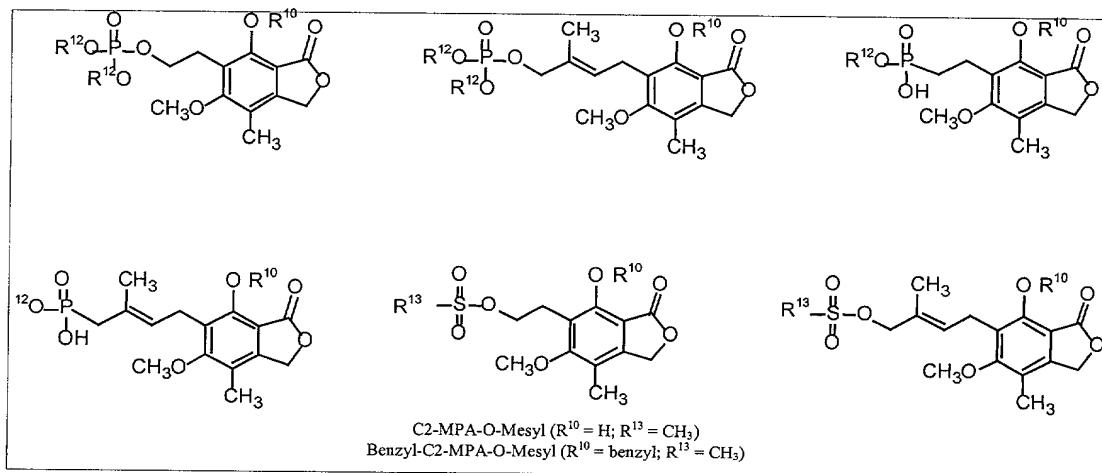


or its pharmaceutically acceptable salt thereof; wherein

each  $R^{10}$  and  $R^{11}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group, and each  $R^{12}$  is independently hydrogen, alkyl or aryl;

in a pharmaceutically acceptable carrier or diluent.

12. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound selected from the group consisting of the following:



or its pharmaceutically acceptable salt thereof; wherein

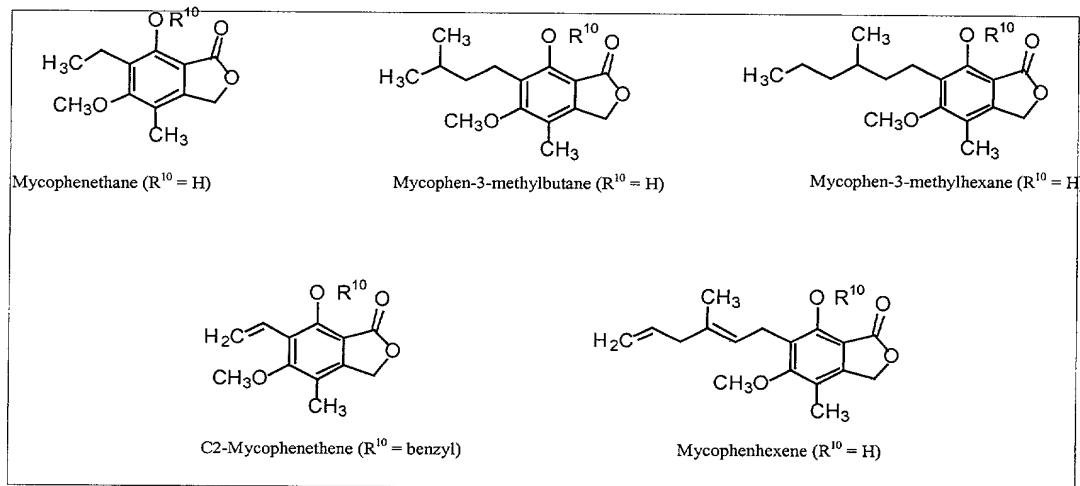
each  $R^{10}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

each  $R^{12}$  is independently hydrogen, alkyl or aryl; and

$R^{13}$  is lower alkyl (i.e. a C<sub>1</sub>, C<sub>2</sub>, C<sub>3</sub>, C<sub>4</sub>, C<sub>5</sub> or C<sub>6</sub> alkyl), lower alkenyl (i.e. a C<sub>2</sub>, C<sub>3</sub>, C<sub>4</sub>, C<sub>5</sub> or C<sub>6</sub> alkenyl), lower alkynyl (i.e. a C<sub>2</sub>, C<sub>3</sub>, C<sub>4</sub>, C<sub>5</sub> or C<sub>6</sub> alkynyl) or a C<sub>3</sub>-C<sub>8</sub> cycloalkyl;

in a pharmaceutically acceptable carrier or diluent.

13. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound selected from the group consisting of the following:

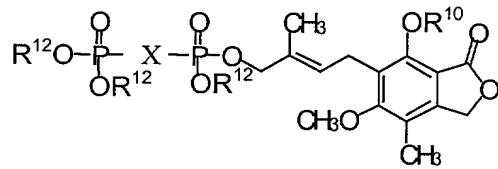
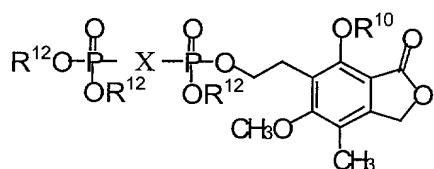


or its pharmaceutically acceptable salt thereof; wherein

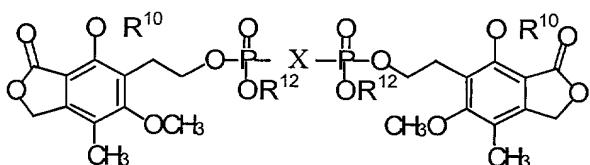
each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

in a pharmaceutically acceptable carrier or diluent.

14. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound selected from the group consisting of the following:



C4-MPAalcohol-ethylenebis(phosphonate)



or its pharmaceutically acceptable salt thereof, wherein

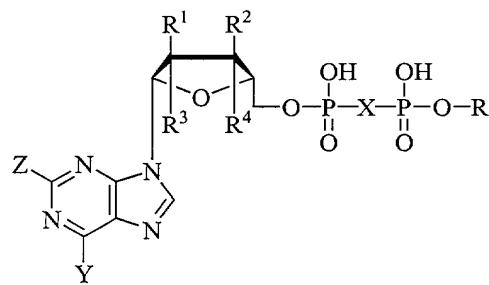
X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene; and

each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group; and

each R<sup>12</sup> is independently hydrogen, alkyl or aryl;

in a pharmaceutically acceptable carrier or diluent.

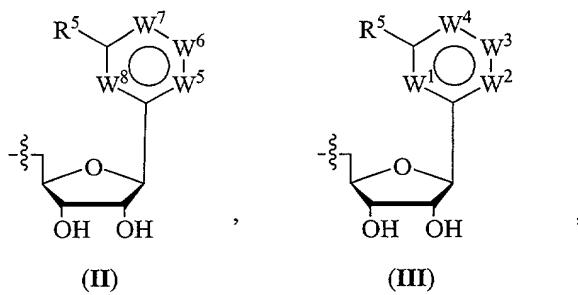
15. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound of the formula (I):



(I)

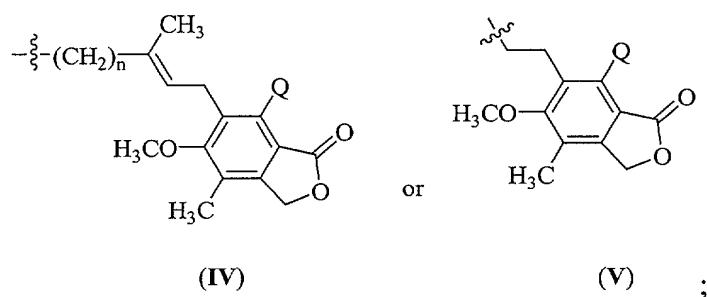
or its pharmaceutically acceptable salt thereof; wherein

R is



(II)

(III)



(IV)

(V)

X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene;

Y is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, NHOH, NHOR<sup>6</sup>, NHNH<sub>2</sub>, NR<sup>6</sup>NH<sub>2</sub>, NHNHR<sup>6</sup>, SH, SR<sup>6</sup>, OH or OR<sup>6</sup>;

Z is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>8</sup>, NR<sup>8</sup>R<sup>9</sup>, NHOH, NHOR<sup>8</sup>, NHNH<sub>2</sub>, NR<sup>8</sup>NH<sub>2</sub>, NHNHR<sup>8</sup>, SH, SR<sup>8</sup>, OH, OR<sup>8</sup>;

W<sup>1</sup>-W<sup>4</sup> are same or different, and independently methyne (-CH=), azomethyne (-N=) or sulfur;

W<sup>5</sup>-W<sup>8</sup> are same or different, and independently methyne (-CH=) or azomethyne (-N=);

R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are independently hydrogen, hydroxyl or fluorine;

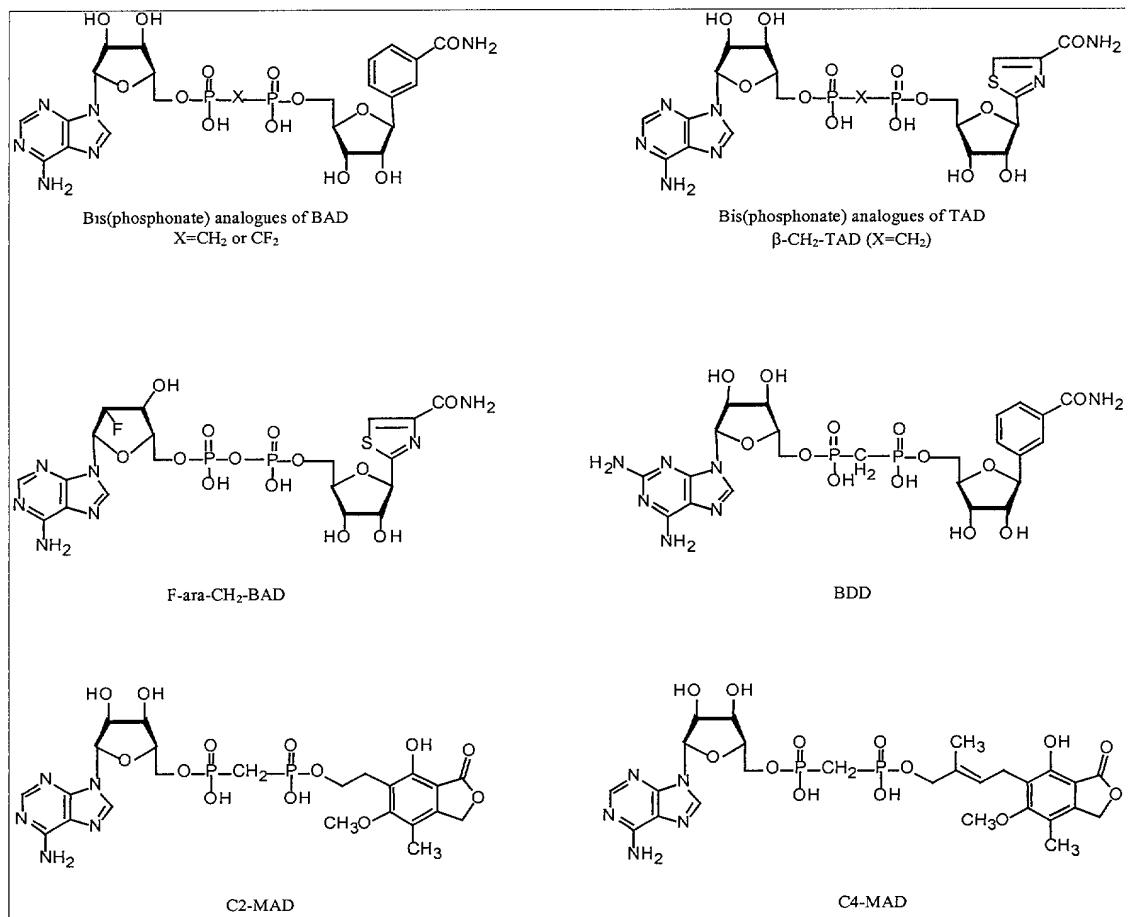
R<sup>5</sup> is halogen (F, Cl, Br, I), CN, CONH<sub>2</sub>, CO<sub>2</sub>Me, CO<sub>2</sub>Et or CO<sub>2</sub>H; and

R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> are independently a lower alkane or alkene of 1, 2, 3, 4, 5 or 6 carbons or aryl or aralkyl;

wherein the compound is specifically not tiazole-4-carboxamide adenine dinucleotide (TAD) or benzamide adenine dinucleotide (BAD);

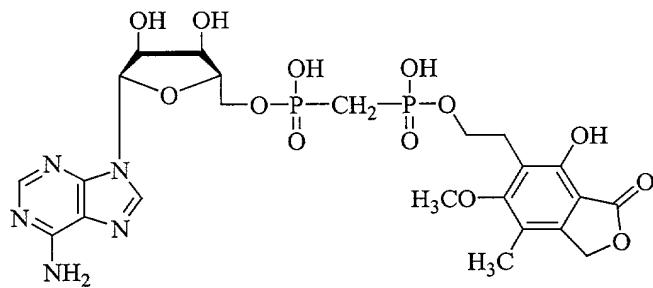
in combination with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

16. The pharmaceutical composition of Claim 15, wherein the compound of formula (I) is selected from the group consisting of the following:



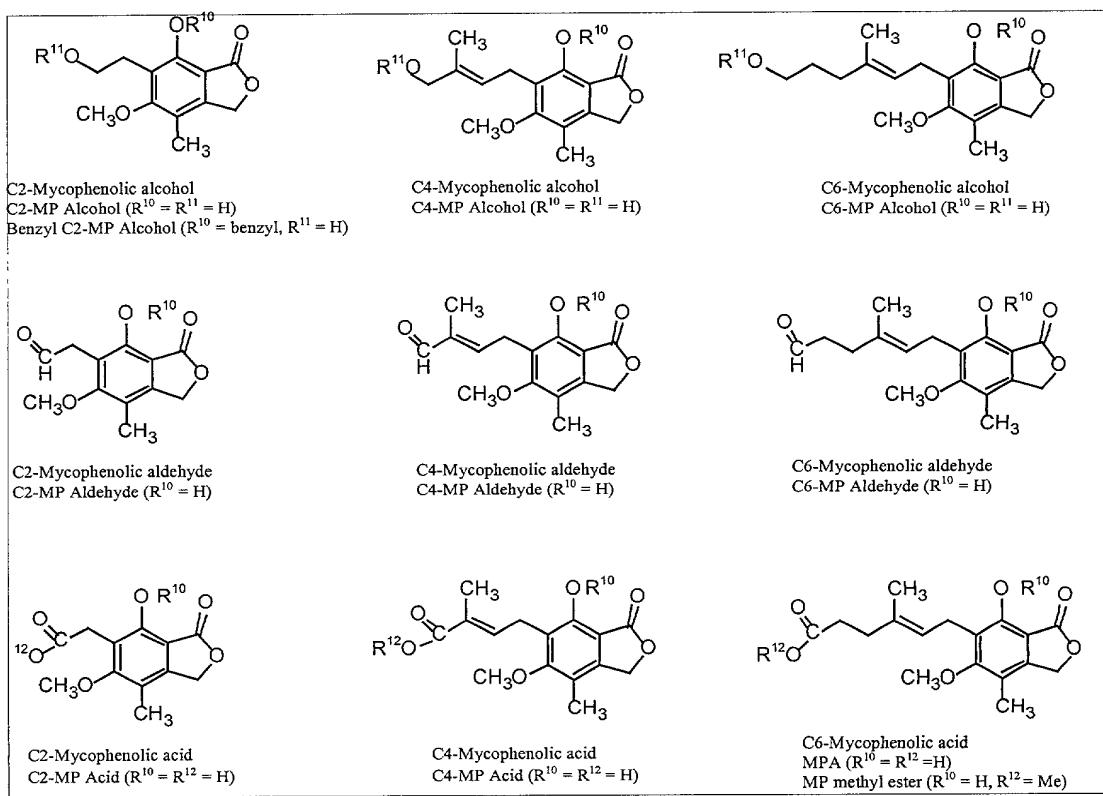
or its pharmaceutically acceptable salt thereof, wherein X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene.

17. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound of the formula:



or its pharmaceutically acceptable salt thereof, in combination with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

18. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound selected from the group consisting of the following:

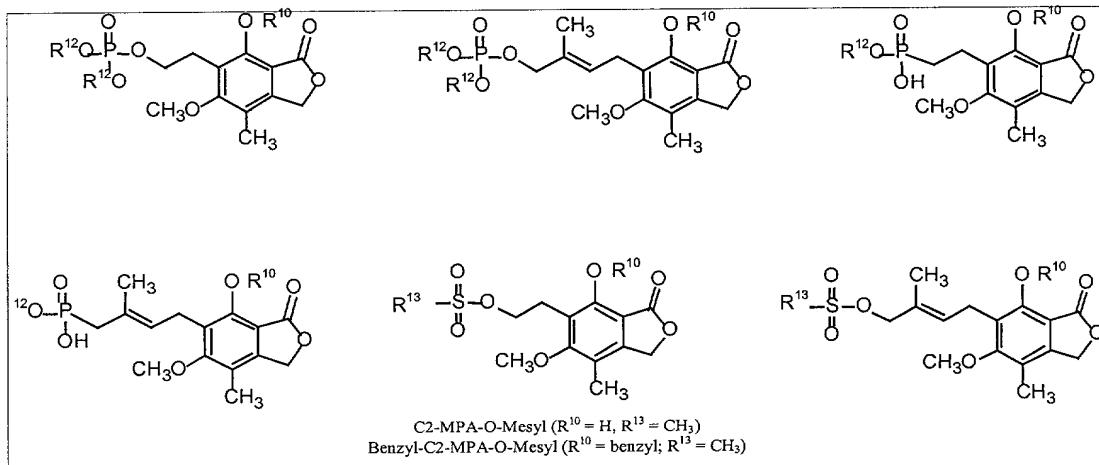


or its pharmaceutically acceptable salt thereof; wherein

each  $R^{10}$  and  $R^{11}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group, and each  $R^{12}$  is independently hydrogen, alkyl or aryl;

in combination with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

19. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound selected from the group consisting of the following:



or its pharmaceutically acceptable salt thereof; wherein

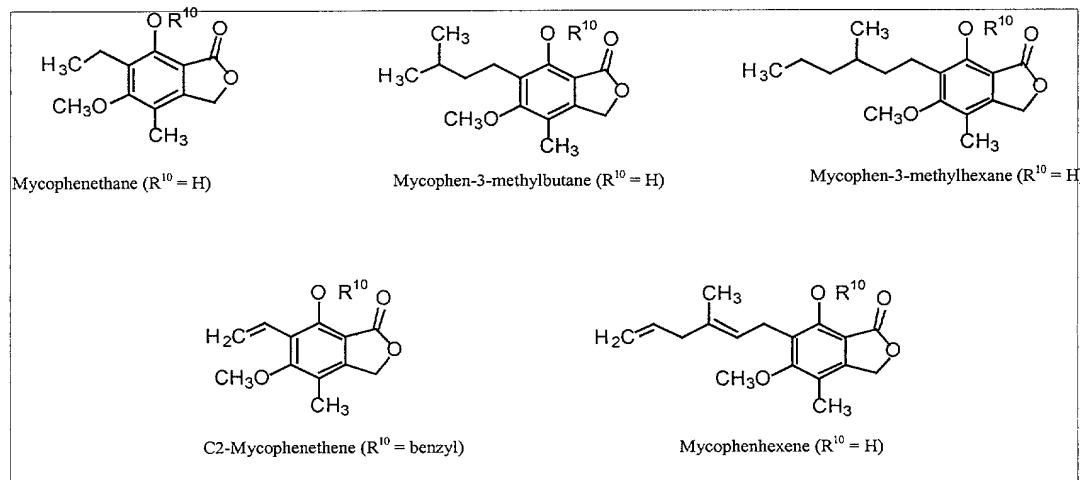
each  $R^{10}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

each  $R^{12}$  is independently hydrogen, alkyl or aryl; and

$R^{13}$  is lower alkyl (i.e. a  $C_1$ ,  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkyl), lower alkenyl (i.e. a  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkenyl), lower alkynyl (i.e. a  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkynyl) or a  $C_3$ - $C_8$  cycloalkyl;

in combination with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

20. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound selected from the group consisting of the following:

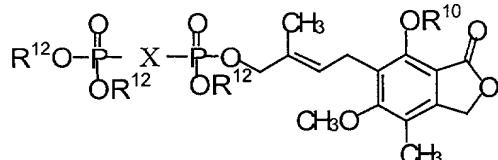
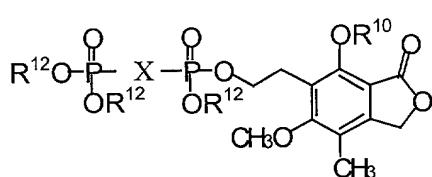


or its pharmaceutically acceptable salt thereof; wherein

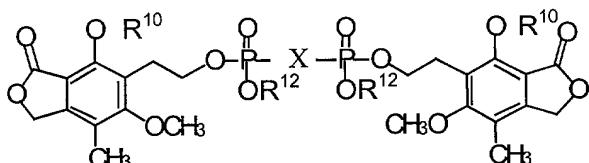
each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

in combination with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

21. A pharmaceutical composition for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising an effective amount of a compound selected from the group consisting of the following:



C4-MPAalcohol-ethylenebis(phosphonate)



or its pharmaceutically acceptable salt thereof, wherein

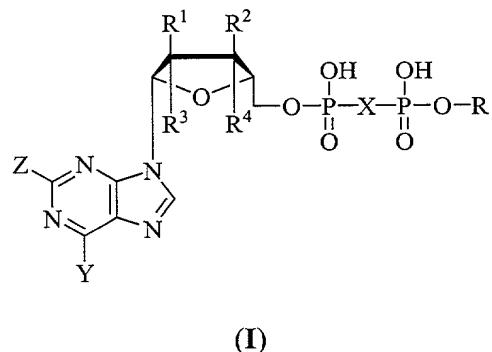
X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene; and

each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group; and

each R<sup>12</sup> is independently hydrogen, alkyl or aryl;

in combination with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

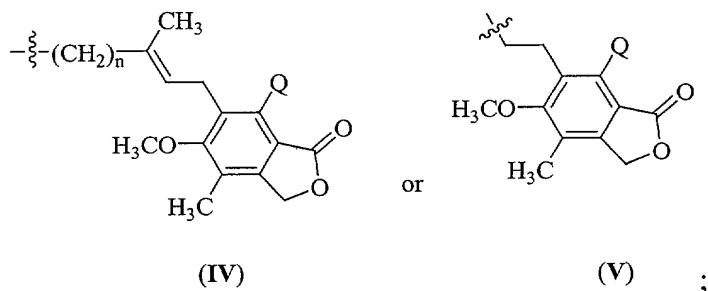
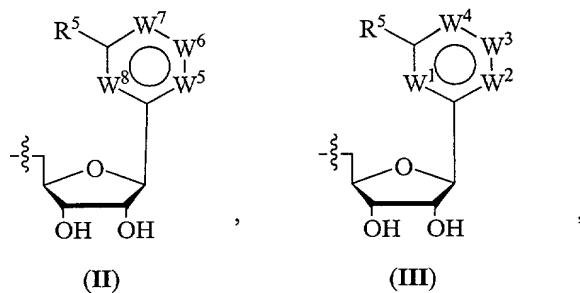
22. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound of the formula (I):



(I)

or its pharmaceutically acceptable salt thereof; wherein

R is



X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene;

Y is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, NHOH, NHOR<sup>6</sup>, NHNH<sub>2</sub>, NR<sup>6</sup>NH<sub>2</sub>, NHNHR<sup>6</sup>, SH, SR<sup>6</sup>, OH or OR<sup>6</sup>;

Z is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>8</sup>, NR<sup>8</sup>R<sup>9</sup>, NHOH, NHOR<sup>8</sup>, NHNH<sub>2</sub>, NR<sup>8</sup>NH<sub>2</sub>, NHNHR<sup>8</sup>, SH, SR<sup>8</sup>, OH, OR<sup>8</sup>;

$W^1$ - $W^4$  are same or different, and independently methyne ( $-\text{CH}=$ ), azomethyne ( $-\text{N}=$ ) or sulfur;

$W^5$ - $W^8$  are same or different, and independently methyne (-CH=) or azomethyne (-N=);

$R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently hydrogen, hydroxyl or fluorine;

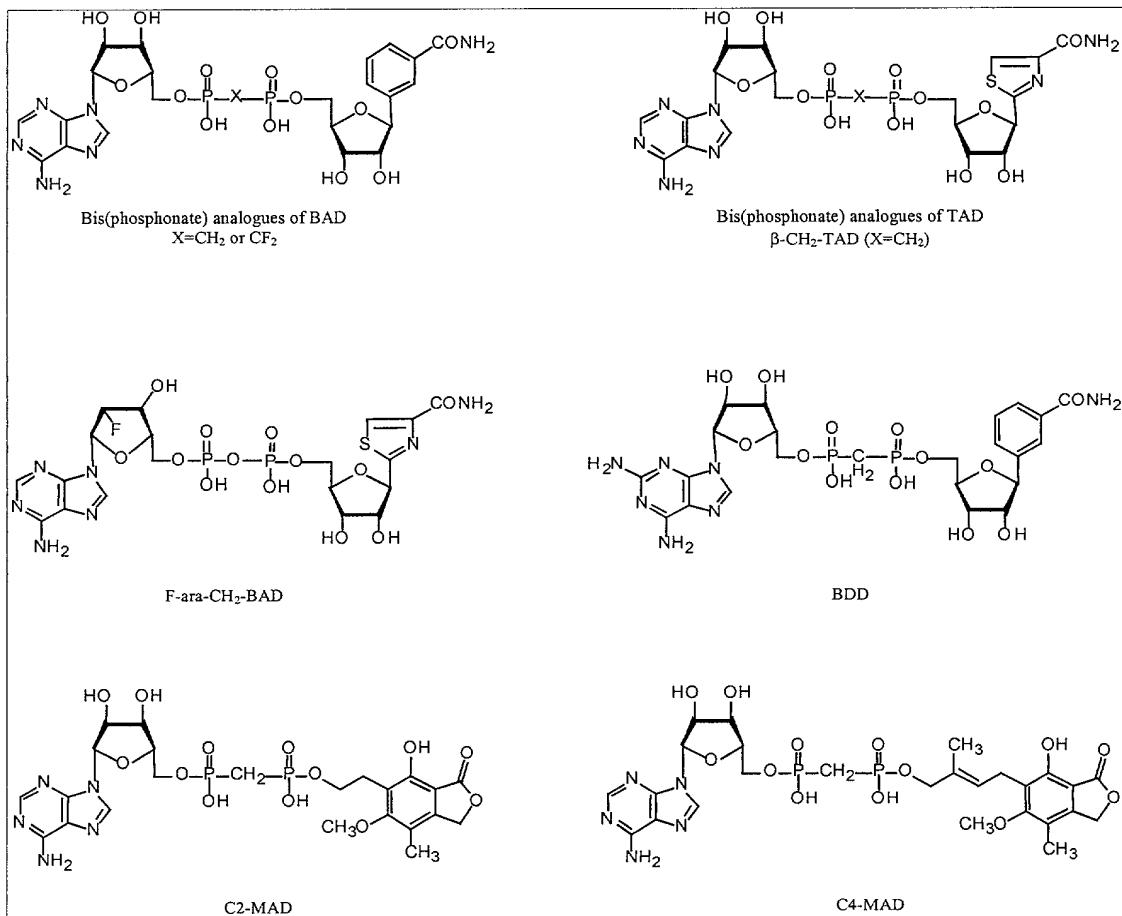
$R^5$  is halogen (F, Cl, Br, I), CN, CONH<sub>2</sub>, CO<sub>2</sub>Me, CO<sub>2</sub>Et or CO<sub>2</sub>H; and

$R^6$ ,  $R^7$ ,  $R^8$  and  $R^9$  are independently a lower alkane or alkene of 1, 2, 3, 4, 5 or 6 carbons or aryl or aralkyl;

wherein the compound is specifically not tiazole-4-carboxamide adenine dinucleotide (TAD) or benzamide adenine dinucleotide (BAD);

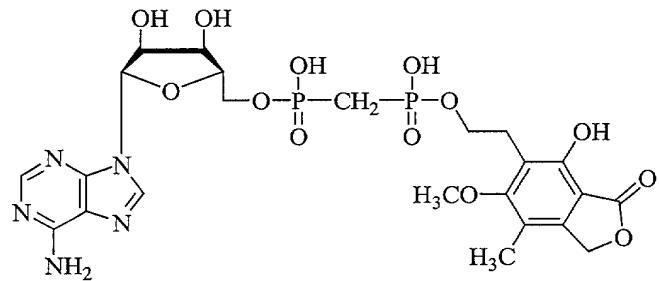
optionally in a pharmaceutically acceptable carrier or diluent.

23. The method of Claim 22, wherein the compound of formula (I) is selected from the group consisting of the following:



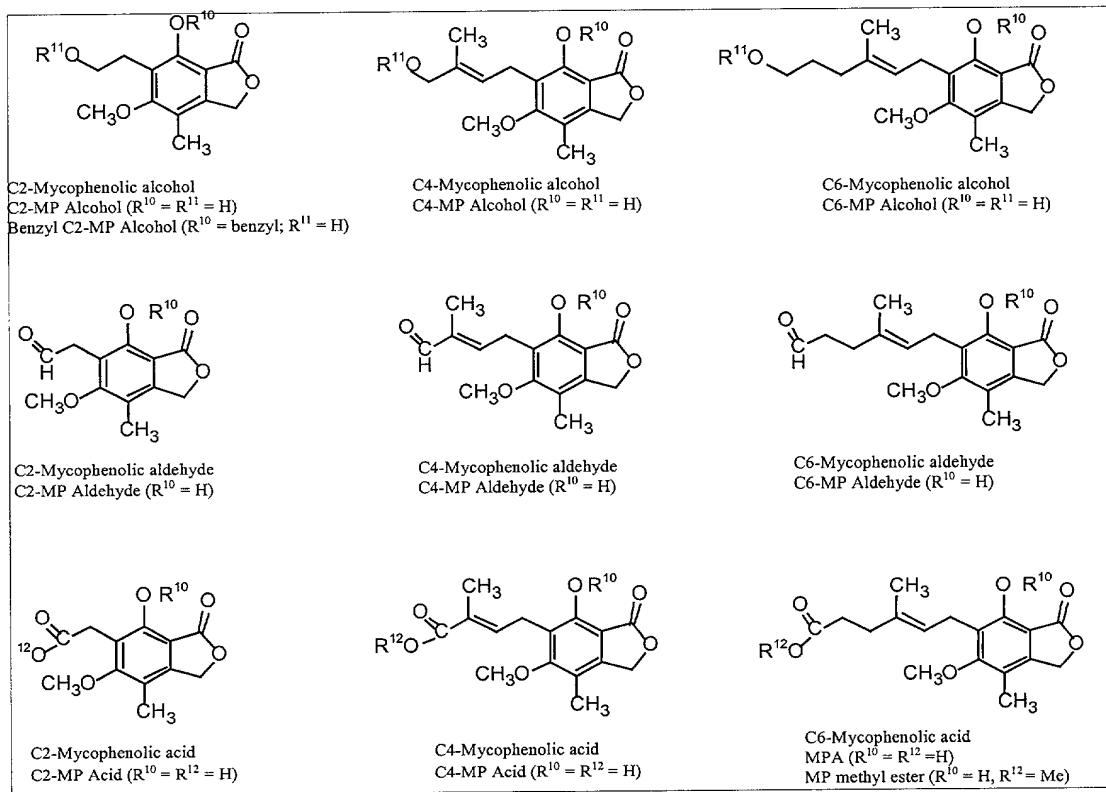
or its pharmaceutically acceptable salt thereof, wherein X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene.

24. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound of the formula:



or its pharmaceutically acceptable salt thereof, optionally in a pharmaceutically acceptable carrier or diluent.

25. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:

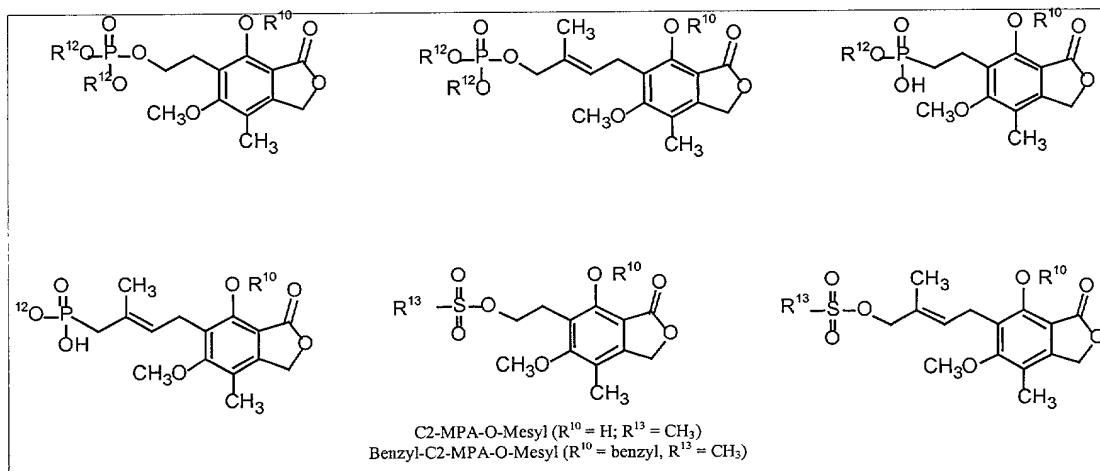


or its pharmaceutically acceptable salt thereof; wherein

each  $R^{10}$  and  $R^{11}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group, and each  $R^{12}$  is independently hydrogen, alkyl or aryl;

optionally in a pharmaceutically acceptable carrier or diluent.

26. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:



or its pharmaceutically acceptable salt thereof; wherein

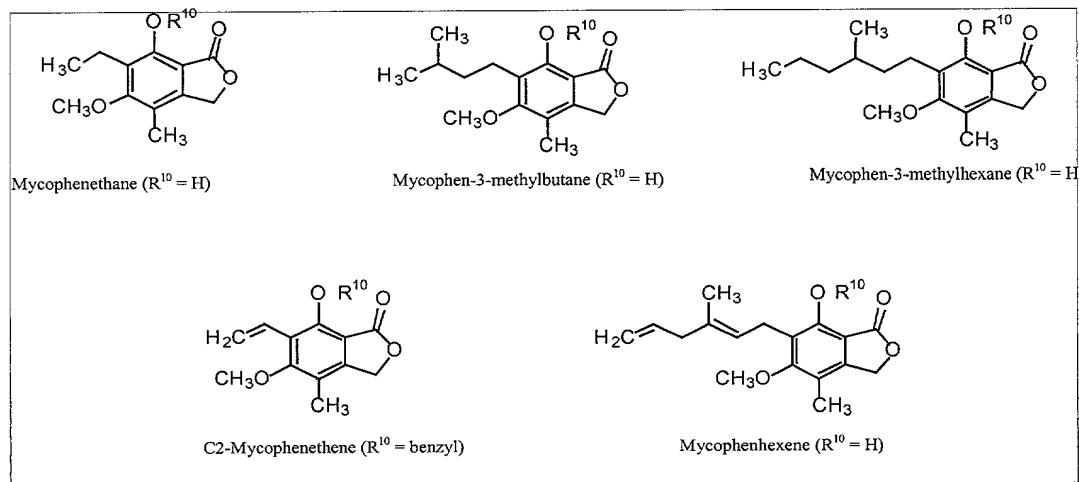
each  $R^{10}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

each  $R^{12}$  is independently hydrogen, alkyl or aryl; and

$R^{13}$  is lower alkyl (i.e. a  $C_1, C_2, C_3, C_4, C_5$  or  $C_6$  alkyl), lower alkenyl (i.e. a  $C_2, C_3, C_4, C_5$  or  $C_6$  alkenyl), lower alkynyl (i.e. a  $C_2, C_3, C_4, C_5$  or  $C_6$  alkynyl) or a  $C_3$ - $C_8$  cycloalkyl;

optionally in a pharmaceutically acceptable carrier or diluent.

27. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:

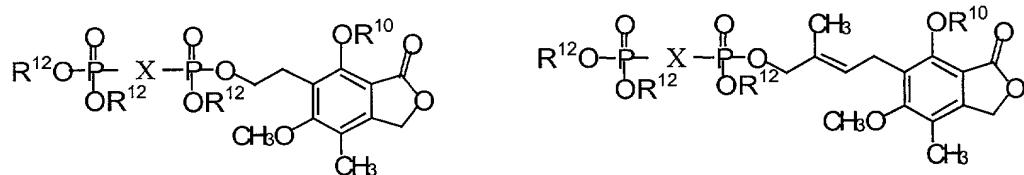


or its pharmaceutically acceptable salt thereof; wherein

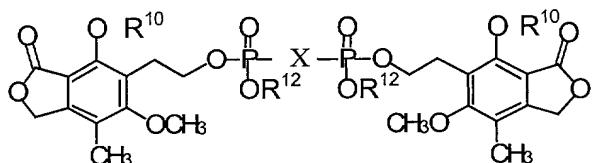
each  $R^{10}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

optionally in a pharmaceutically acceptable carrier or diluent.

28. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:



C4-MPAalcohol-ethylenebis(phosphonate)



or its pharmaceutically acceptable salt thereof, wherein

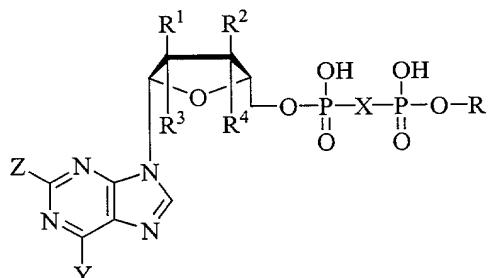
X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene; and

each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group; and

each R<sup>12</sup> is independently hydrogen, alkyl or aryl;

optionally in a pharmaceutically acceptable carrier or diluent.

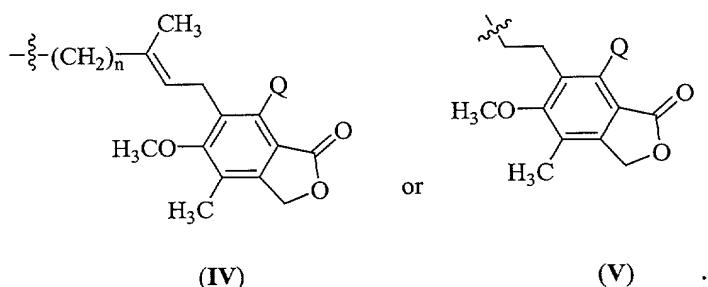
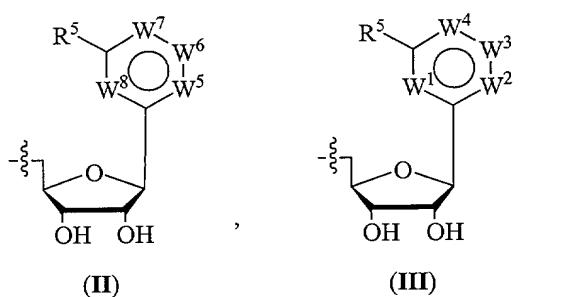
29. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound of the formula (I):



(I)

or its pharmaceutically acceptable salt thereof; wherein

R is



X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene;

Y is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, NHOH, NHOR<sup>6</sup>, NHNH<sub>2</sub>, NR<sup>6</sup>NH<sub>2</sub>, NHNHR<sup>6</sup>, SH, SR<sup>6</sup>, OH or OR<sup>6</sup>;

Z is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>8</sup>, NR<sup>8</sup>R<sup>9</sup>, NHOH, NHOR<sup>8</sup>, NHNH<sub>2</sub>, NR<sup>8</sup>NH<sub>2</sub>, NHNHR<sup>8</sup>, SH, SR<sup>8</sup>, OH, OR<sup>8</sup>;

W<sup>1</sup>-W<sup>4</sup> are same or different, and independently methyne (-CH=), azomethyne (-N=) or sulfur;

W<sup>5</sup>-W<sup>8</sup> are same or different, and independently methyne (-CH=) or azomethyne (-N=);

R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are independently hydrogen, hydroxyl or fluorine;

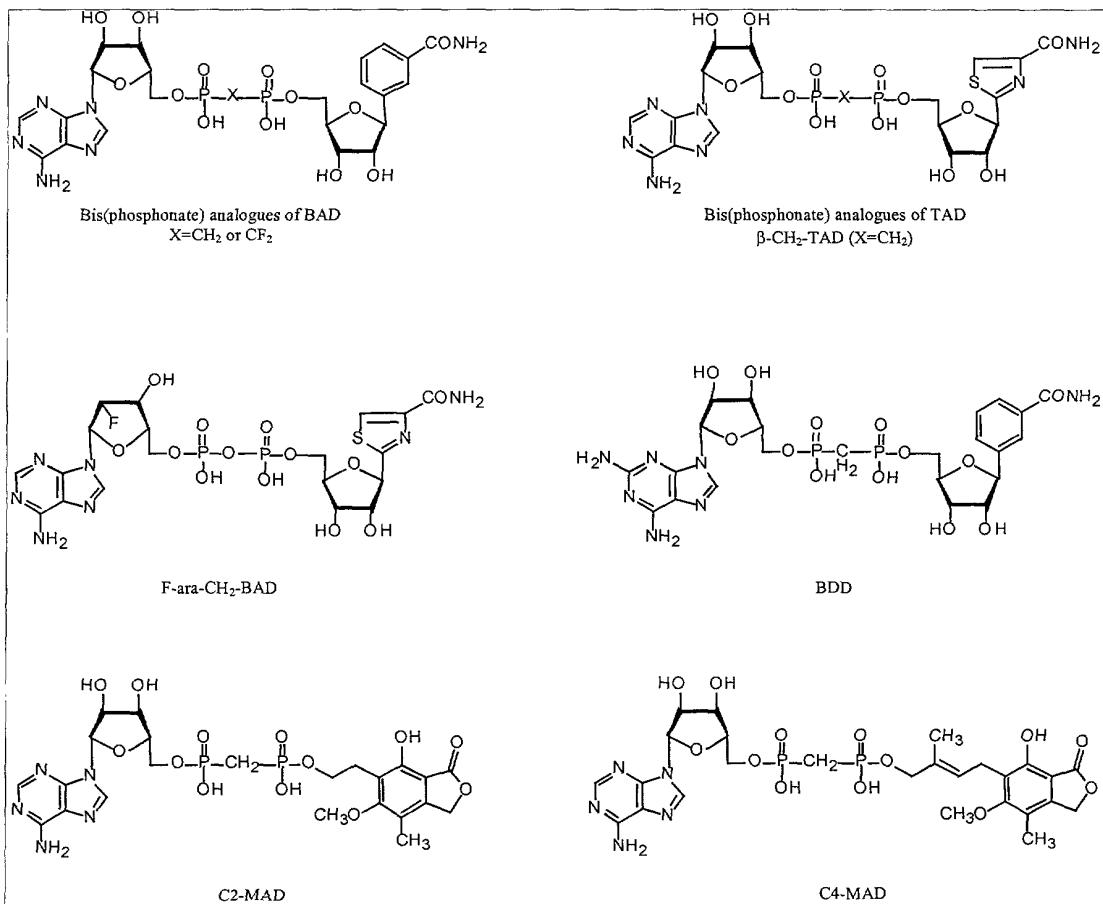
R<sup>5</sup> is halogen (F, Cl, Br, I), CN, CONH<sub>2</sub>, CO<sub>2</sub>Me, CO<sub>2</sub>Et or CO<sub>2</sub>H; and

R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> are independently a lower alkane or alkene of 1, 2, 3, 4, 5 or 6 carbons or aryl or aralkyl;

wherein the compound is specifically not tiazole-4-carboxamide adenine dinucleotide (TAD) or benzamide adenine dinucleotide (BAD);

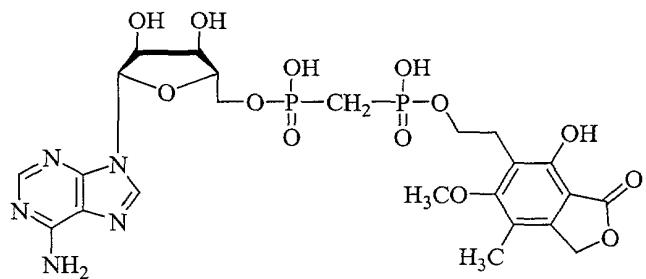
in combination or alternation with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

30. The method of Claim 29, wherein the compound of formula (I) is selected from the group consisting of the following:



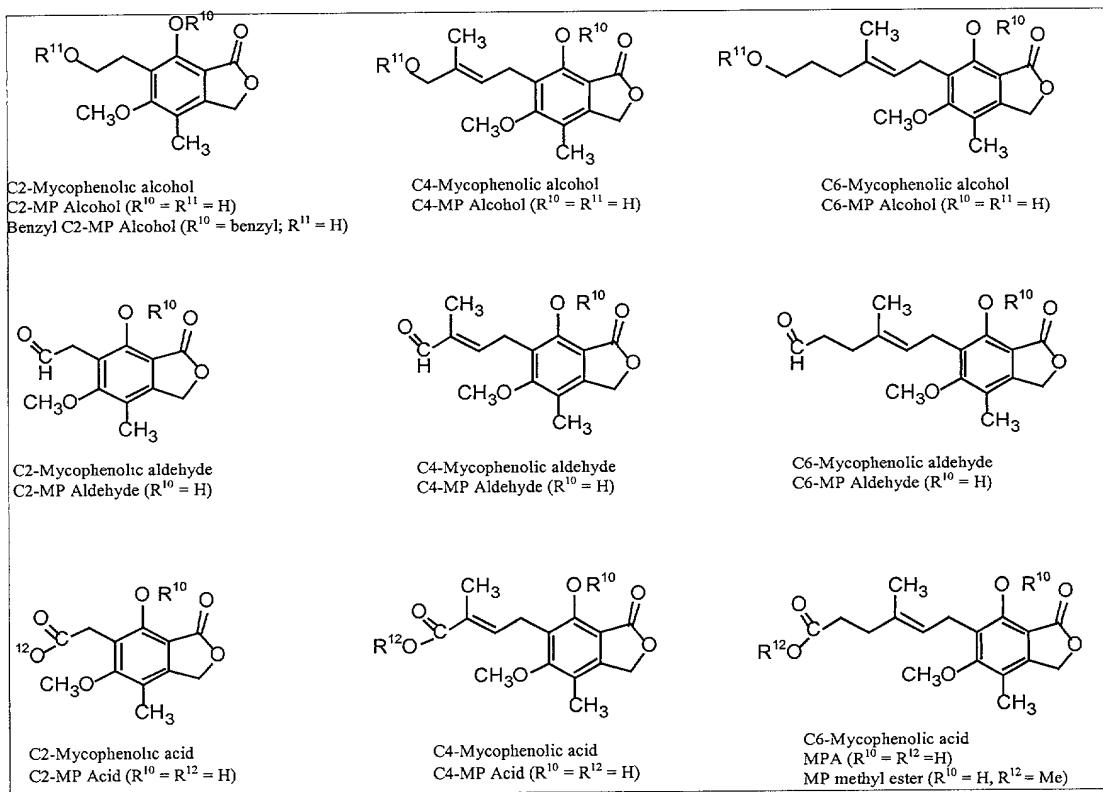
or its pharmaceutically acceptable salt thereof, wherein X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene.

31. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound of the formula;



or its pharmaceutically acceptable salt thereof, in combination or alternation with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

32. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:

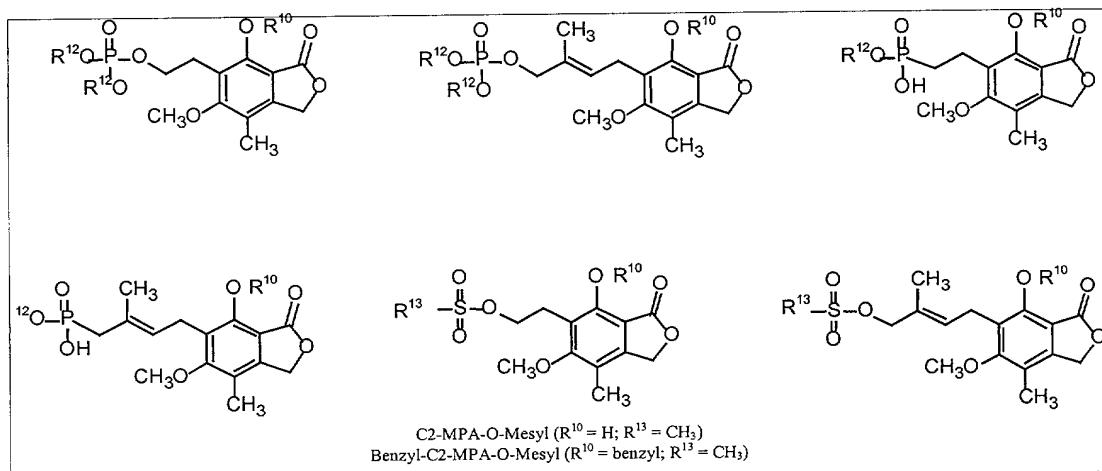


or its pharmaceutically acceptable salt thereof; wherein

each  $R^{10}$  and  $R^{11}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group, and each  $R^{12}$  is independently hydrogen, alkyl or aryl;

in combination or alternation with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

33. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:



or its pharmaceutically acceptable salt thereof; wherein

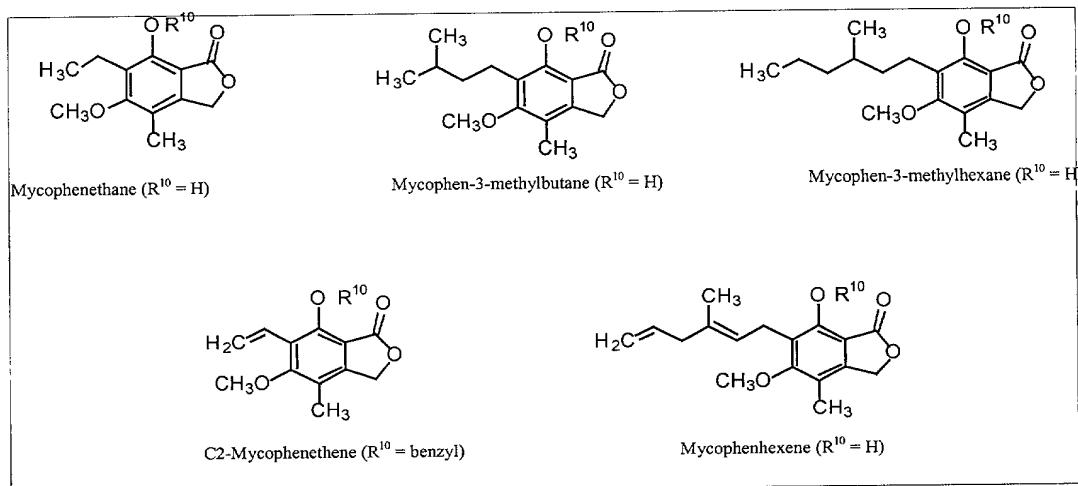
each  $R^{10}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

each  $R^{12}$  is independently hydrogen, alkyl or aryl; and

$R^{13}$  is lower alkyl (i.e. a  $C_1$ ,  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkyl), lower alkenyl (i.e. a  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkenyl), lower alkynyl (i.e. a  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkynyl) or a  $C_3$ - $C_8$  cycloalkyl;

in combination or alternation with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

34. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:

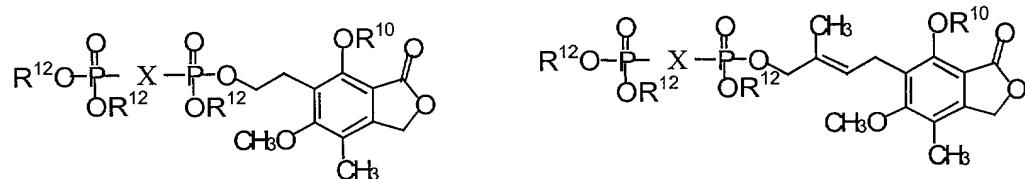


or its pharmaceutically acceptable salt thereof; wherein

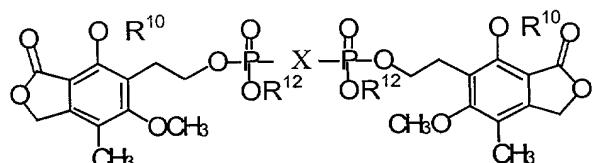
each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

in combination or alternation with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

35. A method for the treatment or prophylaxis of a Flaviviridae infection in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:



C4-MPAalcohol-ethylenebis(phosphonate)



or its pharmaceutically acceptable salt thereof, wherein

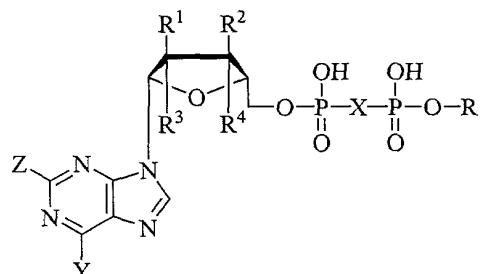
X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene; and

each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group; and

each R<sup>12</sup> is independently hydrogen, alkyl or aryl;

in combination or alternation with one or more other antivirally effective agent, optionally in a pharmaceutically acceptable carrier or diluent.

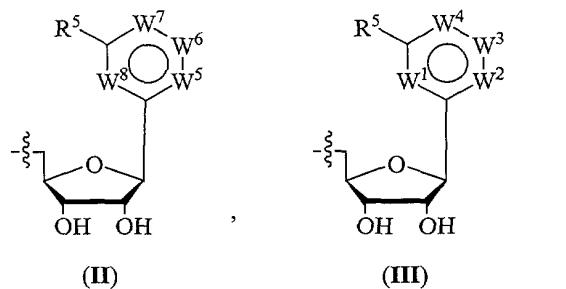
36. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound of the formula (I):



(I)

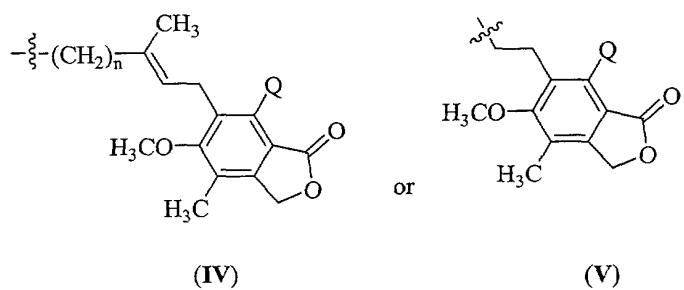
or its pharmaceutically acceptable salt thereof; wherein

R is



(II)

(III)



(IV)

(V)

X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene;

Y is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, NHOH, NHOR<sup>6</sup>, NHNH<sub>2</sub>, NR<sup>6</sup>NH<sub>2</sub>, NHNHR<sup>6</sup>, SH, SR<sup>6</sup>, OH or OR<sup>6</sup>;

Z is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>8</sup>, NR<sup>8</sup>R<sup>9</sup>, NHOH, NHOR<sup>8</sup>, NHNH<sub>2</sub>, NR<sup>8</sup>NH<sub>2</sub>, NHNHR<sup>8</sup>, SH, SR<sup>8</sup>, OH, OR<sup>8</sup>;

W<sup>1</sup>-W<sup>4</sup> are same or different, and independently methyne (-CH=), azomethyne (-N=) or sulfur;

W<sup>5</sup>-W<sup>8</sup> are same or different, and independently methyne (-CH=) or azomethyne (-N=);

R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are independently hydrogen, hydroxyl or fluorine;

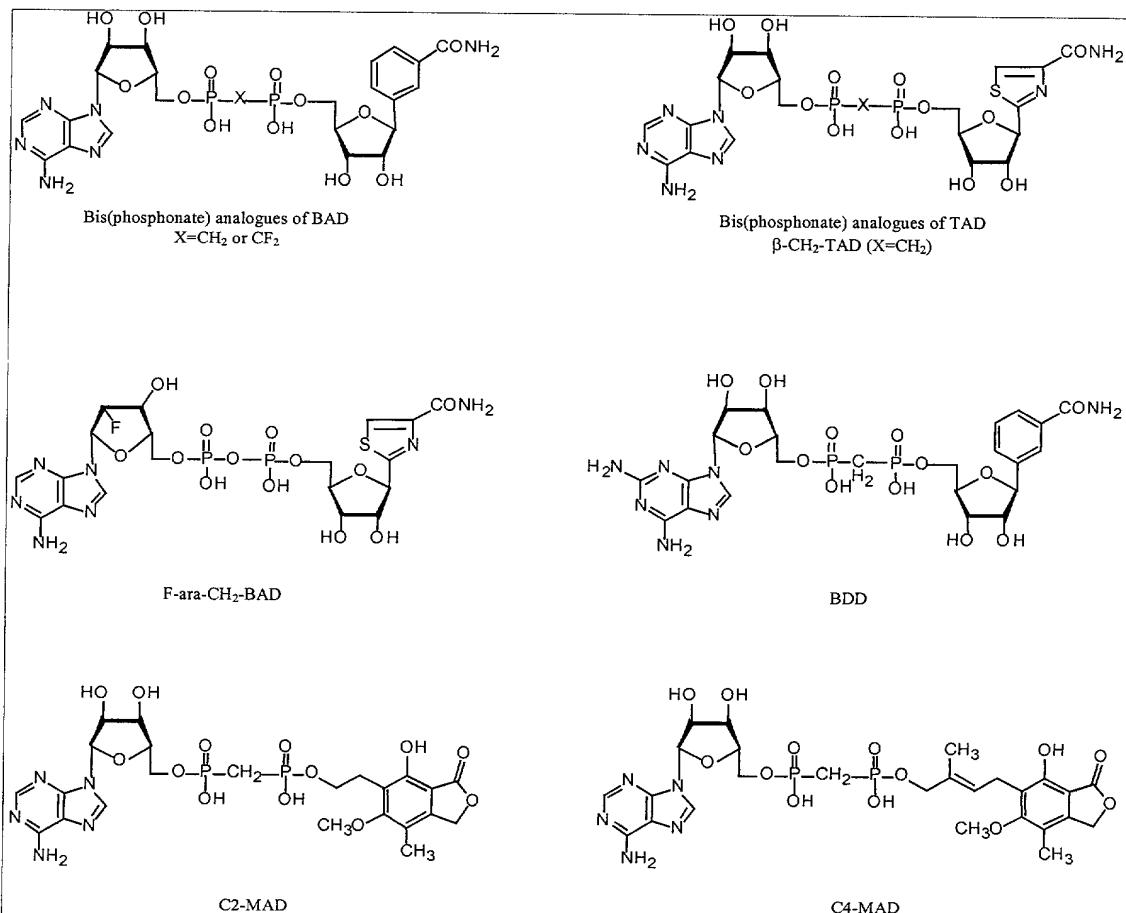
R<sup>5</sup> is halogen (F, Cl, Br, I), CN, CONH<sub>2</sub>, CO<sub>2</sub>Me, CO<sub>2</sub>Et or CO<sub>2</sub>H; and

R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> are independently a lower alkane or alkene of 1, 2, 3, 4, 5 or 6 carbons or aryl or aralkyl;

wherein the compound is specifically not tiazole-4-carboxamide adenine dinucleotide (TAD) or benzamide adenine dinucleotide (BAD);

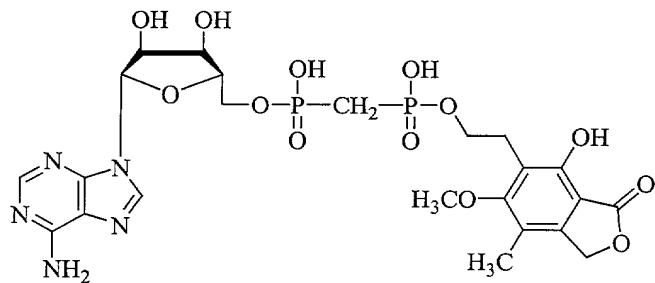
optionally in a pharmaceutically acceptable carrier or diluent.

37. The method of Claim 22, wherein the compound of formula (I) is selected from the group consisting of the following:



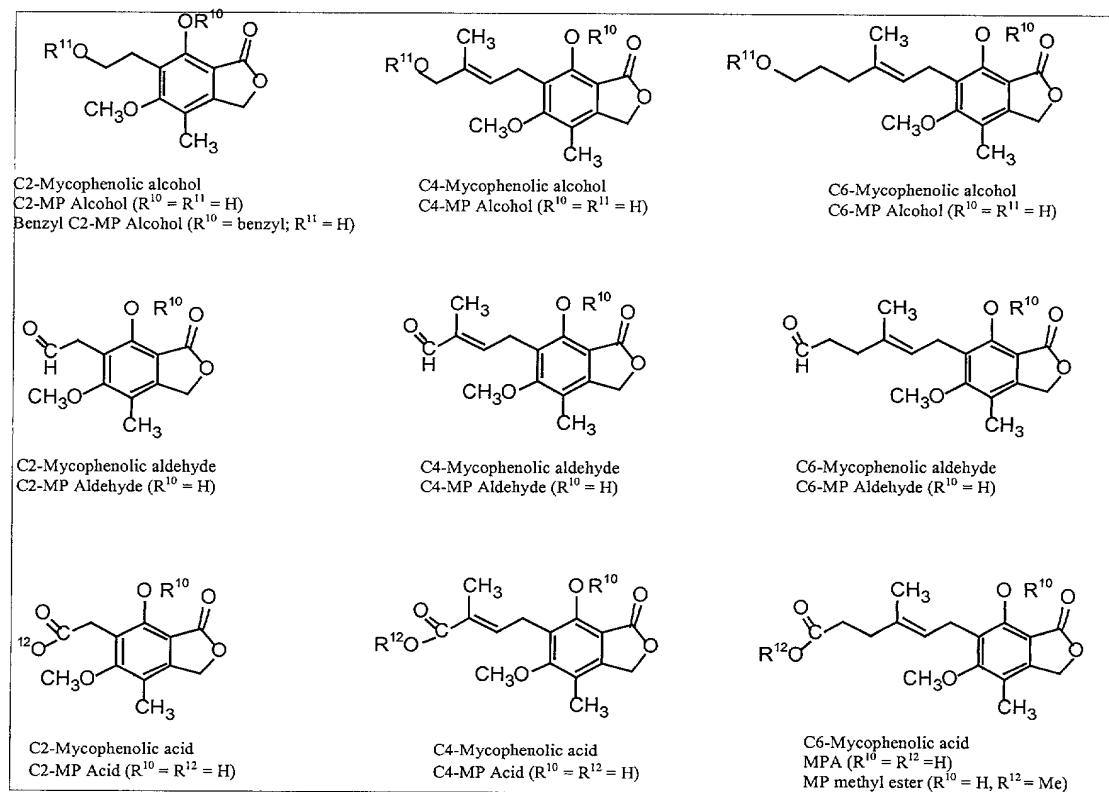
or its pharmaceutically acceptable salt thereof, wherein X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene.

38. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound of the formula:



or its pharmaceutically acceptable salt thereof, optionally in a pharmaceutically acceptable carrier or diluent.

39. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:

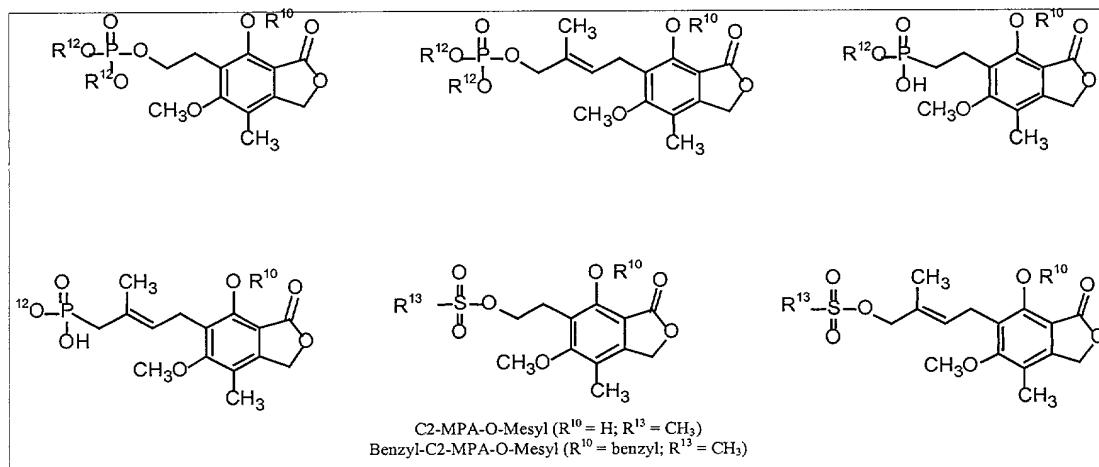


or its pharmaceutically acceptable salt thereof; wherein

each  $R^{10}$  and  $R^{11}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group, and each  $R^{12}$  is independently hydrogen, alkyl or aryl;

optionally in a pharmaceutically acceptable carrier or diluent.

40. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:



or its pharmaceutically acceptable salt thereof; wherein

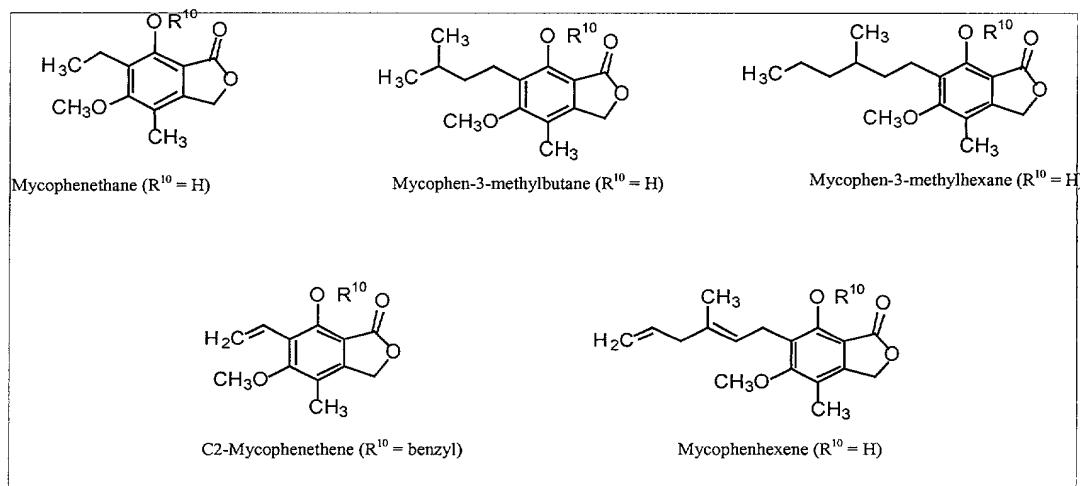
each  $R^{10}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

each  $R^{12}$  is independently hydrogen, alkyl or aryl; and

$R^{13}$  is lower alkyl (i.e. a  $C_1$ ,  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkyl), lower alkenyl (i.e. a  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkenyl), lower alkynyl (i.e. a  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkynyl) or a  $C_3$ - $C_8$  cycloalkyl;

optionally in a pharmaceutically acceptable carrier or diluent.

41. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:

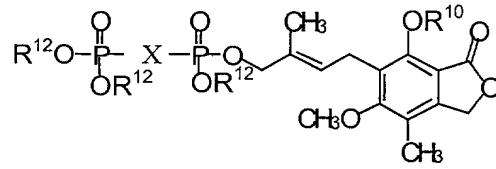
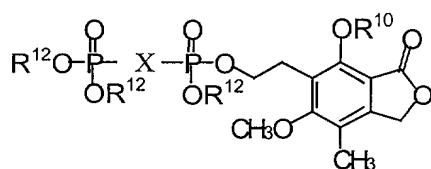


or its pharmaceutically acceptable salt thereof; wherein

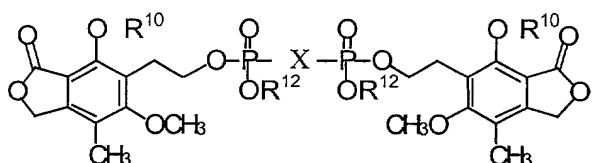
each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

optionally in a pharmaceutically acceptable carrier or diluent.

42. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:



C4-MPAalcohol-ethylenebis(phosphonate)



or its pharmaceutically acceptable salt thereof, wherein

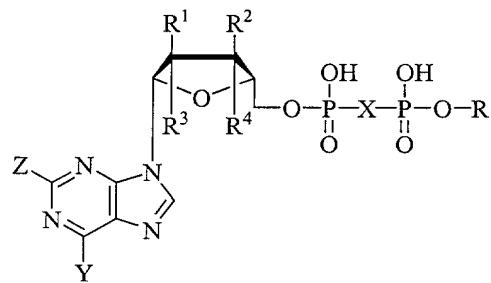
X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene; and

each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group; and

each R<sup>12</sup> is independently hydrogen, alkyl or aryl;

optionally in a pharmaceutically acceptable carrier or diluent.

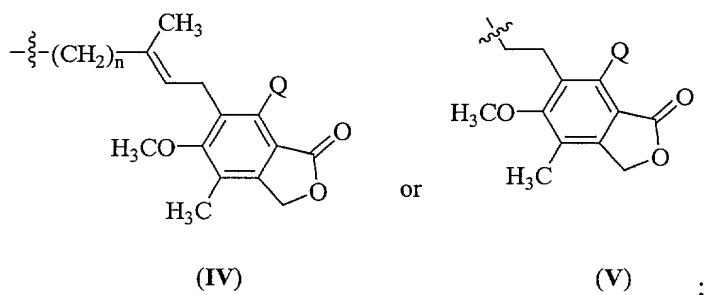
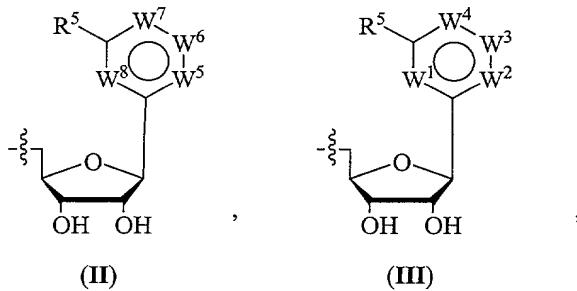
43. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound of the formula (I):



(I)

or its pharmaceutically acceptable salt thereof; wherein

R is



X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene;

Y is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, NHOH, NHOR<sup>6</sup>, NHNH<sub>2</sub>, NR<sup>6</sup>NH<sub>2</sub>, NHNHR<sup>6</sup>, SH, SR<sup>6</sup>, OH or OR<sup>6</sup>;

Z is hydrogen, halogen (F, Cl, Br, I), NH<sub>2</sub>, NHR<sup>8</sup>, NR<sup>8</sup>R<sup>9</sup>, NHOH, NHOR<sup>8</sup>, NHNH<sub>2</sub>, NR<sup>8</sup>NH<sub>2</sub>, NHNHR<sup>8</sup>, SH, SR<sup>8</sup>, OH, OR<sup>8</sup>;

W<sup>1</sup>-W<sup>4</sup> are same or different, and independently methyne (-CH=), azomethyne (-N=) or sulfur;

W<sup>5</sup>-W<sup>8</sup> are same or different, and independently methyne (-CH=) or azomethyne (-N=);

R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are independently hydrogen, hydroxyl or fluorine;

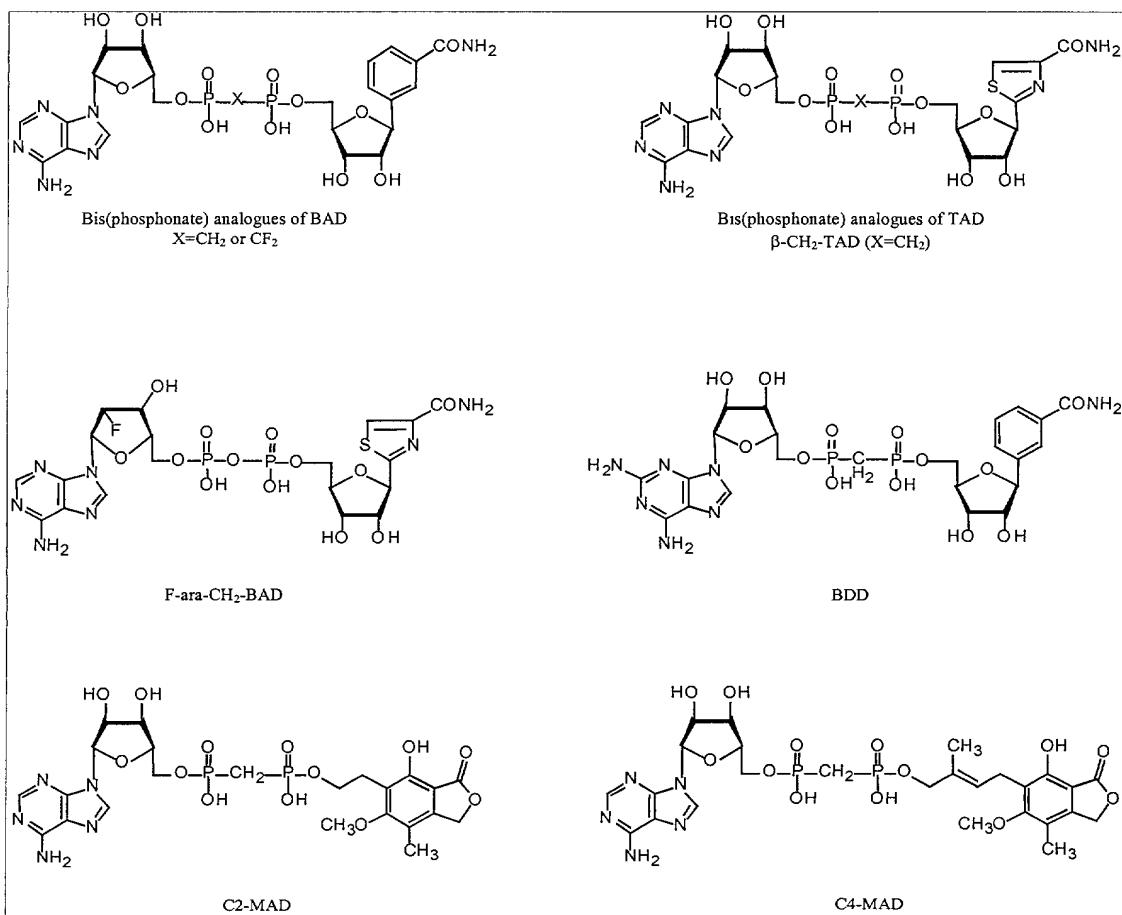
R<sup>5</sup> is halogen (F, Cl, Br, I), CN, CONH<sub>2</sub>, CO<sub>2</sub>Me, CO<sub>2</sub>Et or CO<sub>2</sub>H; and

R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup> are independently a lower alkane or alkene of 1, 2, 3, 4, 5 or 6 carbons or aryl or aralkyl;

wherein the compound is specifically not tiazole-4-carboxamide adenine dinucleotide (TAD) or benzamide adenine dinucleotide (BAD);

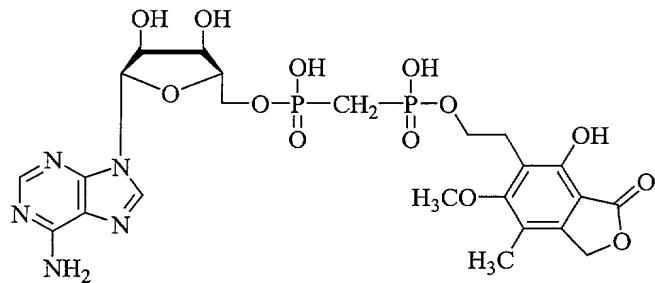
in combination or alternation with one or more other effective antiproliferative agent, optionally in a pharmaceutically acceptable carrier or diluent.

44. The method of Claim 29, wherein the compound of formula (I) is selected from the group consisting of the following:



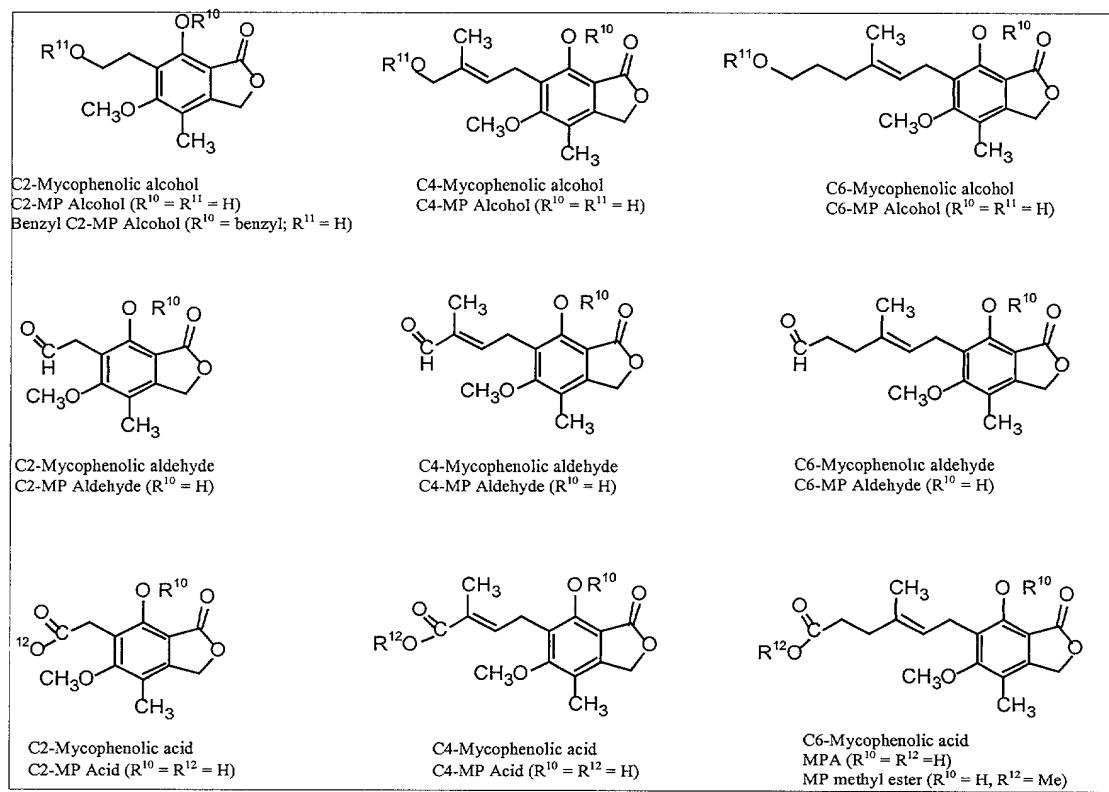
or its pharmaceutically acceptable salt thereof, wherein X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene.

45. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound of the formula;



or its pharmaceutically acceptable salt thereof, in combination or alternation with one or more other effective antiproliferative agent, optionally in a pharmaceutically acceptable carrier or diluent.

46. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:

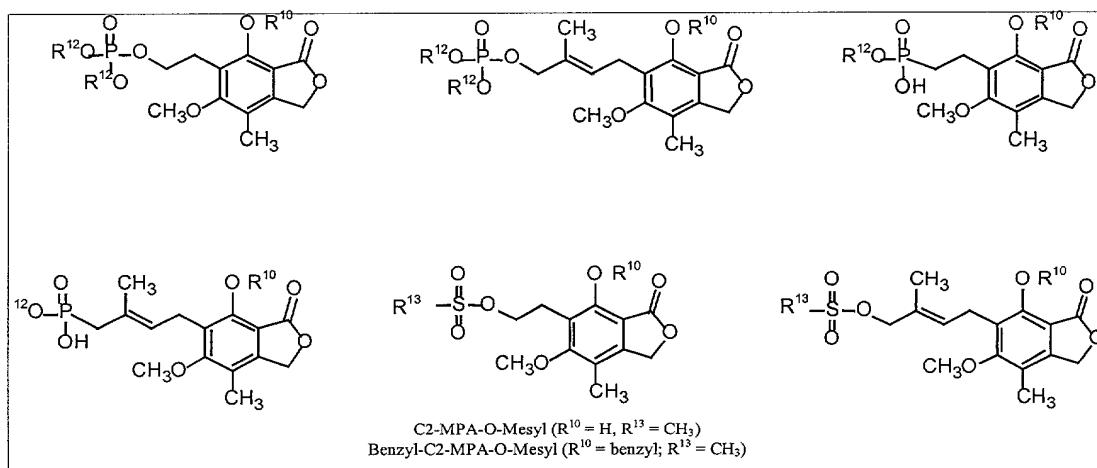


or its pharmaceutically acceptable salt thereof; wherein

each  $R^{10}$  and  $R^{11}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group, and each  $R^{12}$  is independently hydrogen, alkyl or aryl;

in combination or alternation with one or more other effective antiproliferative agent, optionally in a pharmaceutically acceptable carrier or diluent.

47. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:



or its pharmaceutically acceptable salt thereof; wherein

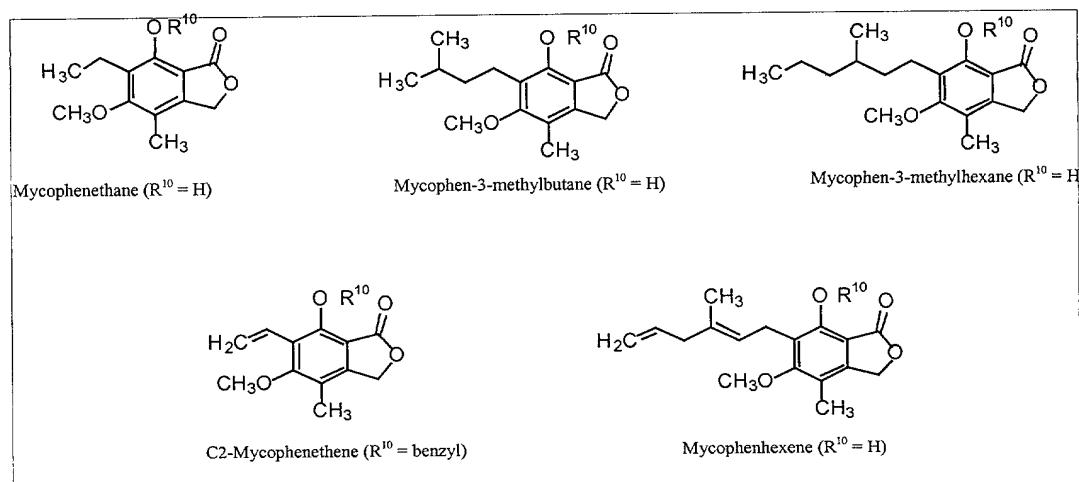
each  $R^{10}$  is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

each  $R^{12}$  is independently hydrogen, alkyl or aryl; and

$R^{13}$  is lower alkyl (i.e. a  $C_1$ ,  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkyl), lower alkenyl (i.e. a  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkenyl), lower alkynyl (i.e. a  $C_2$ ,  $C_3$ ,  $C_4$ ,  $C_5$  or  $C_6$  alkynyl) or a  $C_3$ - $C_8$  cycloalkyl;

in combination or alternation with one or more other effective antiproliferative agent, optionally in a pharmaceutically acceptable carrier or diluent.

48. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:

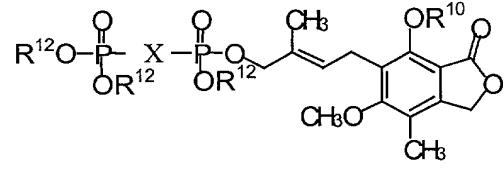
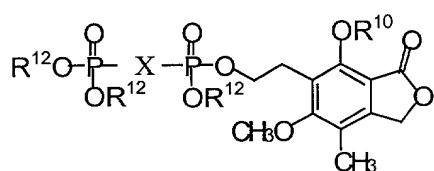


or its pharmaceutically acceptable salt thereof; wherein

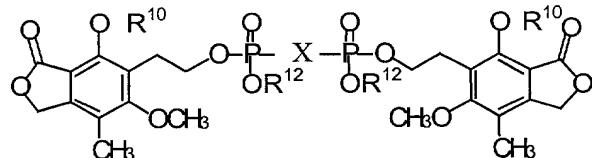
each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group;

in combination or alternation with one or more other effective antiproliferative agent, optionally in a pharmaceutically acceptable carrier or diluent.

49. A method for the treatment or prophylaxis of abnormal cellular proliferation in a host, comprising administering an effective amount of a compound selected from the group consisting of the following:



C4-MPAalcohol-ethylenebis(phosphonate)



or its pharmaceutically acceptable salt thereof, wherein

X is oxygen, sulfur, methylene, monofluoromethylene or difluoromethylene; and

each R<sup>10</sup> is independently hydrogen, alkyl, acyl, benzyl or methoxymethyl (MOM) group; and

each R<sup>12</sup> is independently hydrogen, alkyl or aryl;

in combination or alternation with one or more other effective antiproliferative agent, optionally in a pharmaceutically acceptable carrier or diluent.

50. The method of any one of Claims 22-49, wherein the host is a human.